

THE BEST BICYCLIST ON EARTH



602
388-110

Grown-ups Take Note



This book will guide children ages 9-12 through a series of activities making them the best possible bicyclists.

Over ten years of national research and testing have gone into this book. The program was tested and perfected in more than ten communities. Most of the information is common sense, but some may be new to you. It is important that you give this book your full attention. Help your child go through each activity. You will be the teacher.

Bicycling may be the most exciting new discovery of the child you are working with. Share this excitement, and the moments it takes to teach these skills. You will quickly discover you are really teaching survival skills. This book takes advantage of the child's enthusiasm for bicycling to teach roadway responsibility. Sadly, many children don't learn these tips until they are learning how to drive, at about age 16. By then many children have been hurt, habits have been formed, and attitudes have been shaped. That is why you must take great care to make this a fun learning experience, and do it while a child is young and curious.

In some cases you may have different ideas about

what to do than the book teaches. That's good as long as you are exploring better ways to teach. But, if you have a notion that a child should do something significantly different from what this book teaches, be silent until you have learned all that you can on the subject. As an example, some parents feel bicyclists should ride racing traffic.

It may surprise you to learn that many accidents are caused by oversights and incorrect information, such as this one. More than a fifth of all bicycle accidents are caused by bicyclists riding against traffic. This puts them in a position where the motorist is not expecting them.

Every national safety organization agrees on what is important to teach children about bicycle safety. This book draws its lessons from the very best traffic safety specialists. We have not compromised a single lesson. You may want to read a more detailed book on bicycle safety facts and issues. If so, the most readable and respected book in the field is offered through the American Automobile Association Foundation for Traffic Safety. Write for *Bicycle-Safety Education - Facts and Issues* by Dr. Kenneth D. Cross, 2990 Tele-



VIRGINIA POLYTECHNIC INSTITUTE
AND STATE UNIVERSITY



VIRGINIA STATE UNIVERSITY

Virginia Cooperative Extension programs and employment are open to all, regardless of race, color, religion, sex, age, veteran status, national origin, disability, or political affiliation. An equal opportunity/affirmative action employer. Issued in furtherance of Cooperative Extension work, Virginia Polytechnic Institute and State University, Virginia State University, and the U.S. Department of Agriculture cooperating. J. David Barrett, Director, Virginia Cooperative Extension, Virginia Tech, Blacksburg; Lorenza W. Lyons, Administrator, 1890 Extension Program, Virginia State, Petersburg.

Special thanks to Dr. Richard Blomberg, Dunlap & Associates. Text written by Dan Burden, edited by Pat Pieratte. Illustrations by Tex Wilson. The following individuals helped to review this book: Officer Charlie Dunn and Cynthia McArthur.



Copyright © 2001 by Outdoor Empire Publishing, Inc. All rights reserved. No part of this publication may be reproduced in any form or by any process without permission in writing from the publisher. Effort has been made to make this publication as complete and accurate as possible. All references contained in this publication have been compiled from sources believed to be the more recent, reliable, and to represent the best current opinion on the subject. Outdoor Empire Publishing is not responsible or liable for any adverse effects or consequences to any person or entity with respect to any loss or damage caused or alleged to be caused directly or indirectly from the misapplication or injudicious use of the information contained in the publication.

Manufactured by Outdoor Empire Publishing, Inc., P.O. Box 19000, Seattle, WA 98109. Phone 206-624-3845 / Fax 206-695-8512. Printed in U.S.A.

Visit our website at www.outdoorempire.com for more great outdoor safety publications.

star Court, Suite 100, Falls Church, Virginia 22042.
Cost: \$1.

Most Important

Children have limitations. This becomes critical in traffic. Children see differently than adults. For example they have a lower profile, and can't see over the shrubs near the base of many driveways. Nor can motorists see the children there. Motorists need to know this, so they can do a better job of looking out for children. Parents need to know this, to teach their children vital skills and to better control the area around their own driveways. This is the place where children are most often hurt.

Here are just a few other factors that we must recognize and accept about children:

1. Children have one third less peripheral vision than adults.
2. They have difficulty detecting the source of a sound.
3. They can only focus on one thought at a time.
4. They mix fantasy with reality.
5. They have learned to expect grown-ups to look out for them.

6. They model their behavior after older children and adults.

7. At a young age children do not perceive hazards.

8. Children are spontaneous and curious.

We cannot change these conditions. However, we can speed up the learning process. That is what this book is about.

Thus, as you work with your child, keep in mind that these skills will help them develop essential skills at an earlier date. You must teach them to model their behavior only after the best motorists and bicyclists. If you sometimes roll through a stop sign, enter an intersection without a noticeable search for traffic, or leave your own bike out in the rain, don't expect your child to do better.

Expand upon this book. As you drive, teach your child. When you come up to a four way stop, ask your child who gets to go first. Explain why this is so. When it is raining cats and dogs, point out that it would be impossible for you to see a bicyclist. If you see a bicyclist doing something dreadfully wrong, such as riding at night without lights, point this out. As you travel, see how many wrong things you can find bike riders doing. Over a period of time, these games and mini-teaching sessions will reinforce many of the skills stressed in this book.

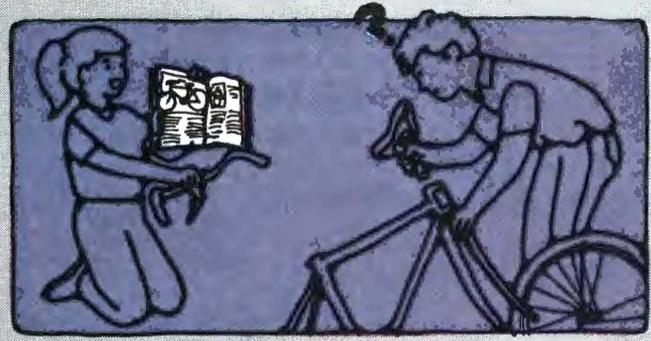


Table of Contents

Grown-ups Take Note	2
Most Important 3	
Chapter 1: This Book is About	5
Before We Begin 5 • First Steps 6	
Chapter 2: The Bike Shop	7
Names of Bike Parts 7 • Draw Your Bike 7 • The Frame 8 • The Wheels 8 • The Fork 9 • Handlebars 10 • Seat 10 • Brakes 10 • The Drivetrain 11 • Types of Bicycles 11 • Which Bike Do I Choose? 13 • Basic Repair 14 • Proper Fit 16 • Serial Numbers 16 • Quick Check List 17 • Summary 17 • Naming Your Bike Parts 17	
Chapter 3: Bikes are Vehicles	19
Special Rules Apply to Bicycles 20	
Chapter 4: How Much Do You See?	21
Why We See Some Things and Not Others 22 • Weather 23 • Things That Hide You 24 • Night Riding 24 • Wrong Way Riding 24	
Chapter 5: Bicycling Hazards	26
Train Your Brain 28 • How Did You Do? 28 • Other Activities 28	
Chapter 6: Reaction Time	30
Speed/Distance 31 • Which Vehicle Stops Fastest? 32 • What About Trucks and Buses? 32 • What Happens When Two Ride on a Bicycle Built for One? 32 • What Increases Reaction Time? 32 • The 12 Second Rule 33	
Chapter 7: Bicycling Emergencies	35
Other Common Emergencies 36 • Your Emergency Experiences 37 • Driveways 38 • Other Driveway Rules 38 • Probability 38	
Chapter 8: Riding Safely	40
Sidewalks 40 • Roadways 40 • What Part of the Road Do I Ride On? 40 • Neighborhood Intersections 41 • Wicked Intersections 41 • Intersection Rules 41 • Special Intersection Secret 42 • Right-of-Way 42 • Signs and Signals 43	
Chapter 9: Tips and Review	44
Tip #1 44 • Tip #2 44 • Tip #3 45 • Tip #4 45 • Tip #5 45 • Tip #6 45 • Tip #7 46 • Tip #8 46 • Special Bike Words 47	
Resources	47

Chapter 1

This Book Is About...



This book is about bicycles. Scientists and poets write that nobody has invented a more perfect machine than the bicycle. Even with all our computers, tools and other inventions, the bicycle is still recognized as the most perfect invention. It is cheap to build, quiet, and doesn't pollute. It uses only human energy, gives us exercise, and takes us where we want to go much faster than walking.

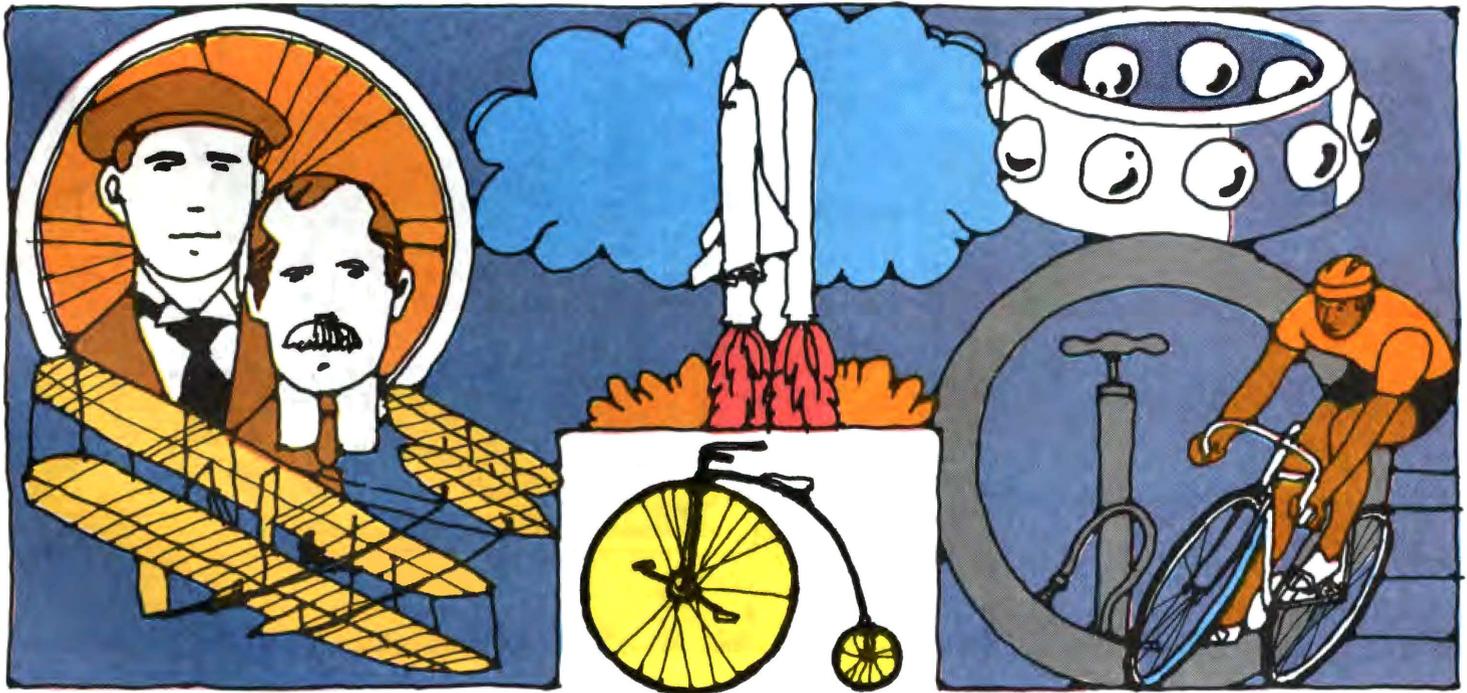
A lot of grown-ups have forgotten how great bicycles are. That's too bad. A lot of other grown-ups who ride bicycles have never learned the best way to ride. That's too bad, too. Nobody took the time to teach them

Bicycle technology led to many of today's inventions.

about bicycles. So, as you learn to ride, forget about watching grown-ups. Follow the tips in this book, then practice until you are perfect. This is the only way to become the best bicyclist on earth. Even if you do not wish to be the best bicyclist on earth, read this book as though that were your goal. It may help you become an expert. You may be better at bicycling than just about any grown-up.

Before We Begin

Learning to bicycle is more fun with others. Find a friend who wants to learn with you. For some lessons you may want a grown-up to explain, and to help share ideas. Make



sure this friend will take bicycling as seriously as you do. Make sure any grown-ups who help you get a chance to read this book, too, especially the section for grown-ups. In some cases you can use this book with a program in your school, or at your neighborhood bicycle rodeo.

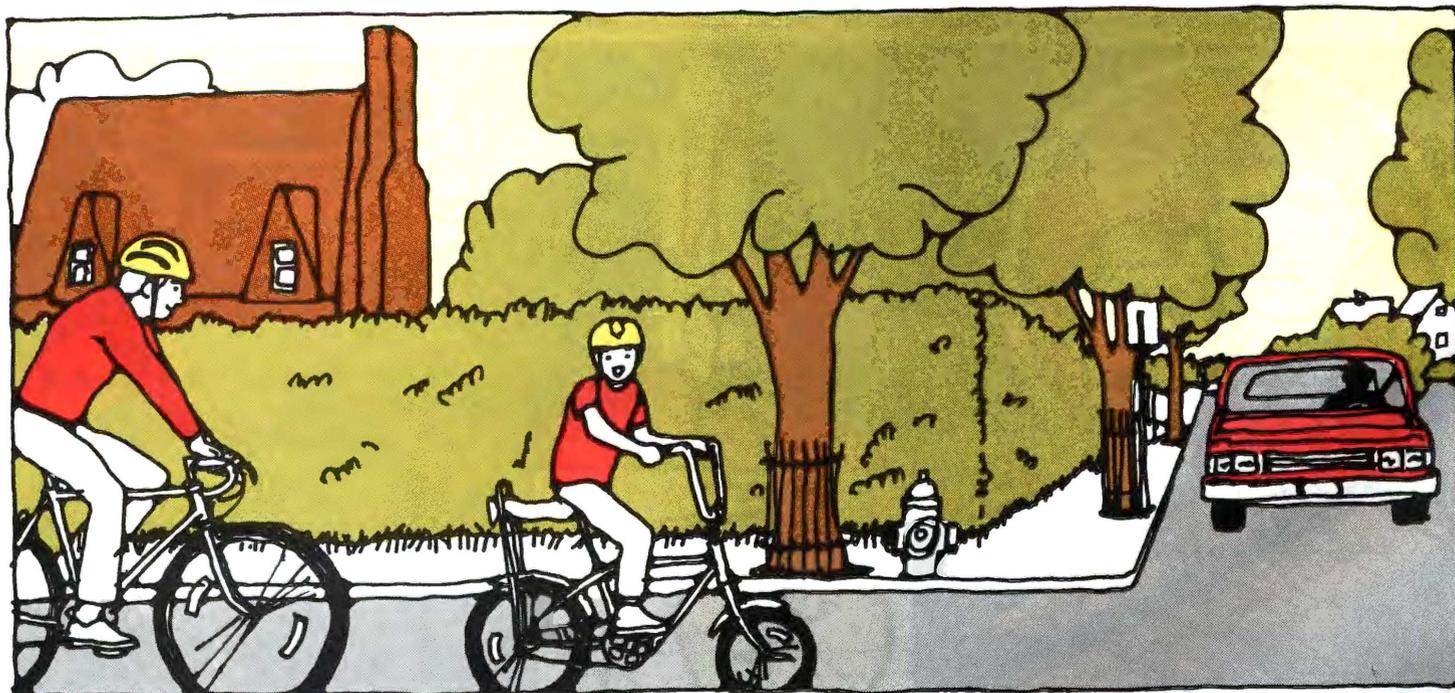
First Steps

If you want to become a great bike rider, you need to develop the right attitude. Decide that you are going to be so good that if you were an astronaut, you would be picked to ride the first bicycle on the moon. To be this good, you will have to train yourself. You will have to learn things otherwise unimportant. Here are the special things you will study in this book:

1. **You,** _____

(Insert your name). At the end of this book, you will know more about what you can do. How well do your eyes work? How important is your hearing when you ride a bicycle? How can you balance even better on your bike? How quick are your reflexes?

The lower profile of children hides them from motorists.

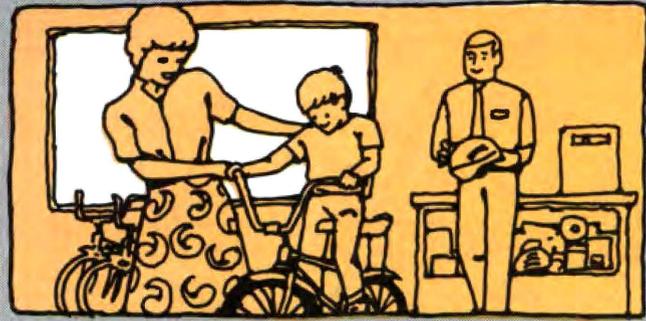


2. **Your Bicycle.** The bicycle you have now, or the bicycle you may have some day, can do much more than you may think. It also has certain limits, though. At ten miles per hour, how many feet does it take to stop? Can your bike stop in a shorter distance than a car? In how narrow of a lane can this bike turn? How fast can it go? How far can it take you without repair?
3. **Your Neighborhood.** Your bicycle can whisk you through some pretty narrow places, in and around a lot of objects, and over many sidewalk cracks or roadway potholes. You must learn much more about where you ride, and who you share the neighborhood with. Most motorists, for example, are not looking for relatively small objects like a bicycle, and may not see you. So you must learn some new skills to avoid them.

After completing this course, you will be better prepared to deal with any bicycle trip you make. Your parents won't be as worried when you announce you are going to ride your bike to visit a friend, to school, or to the park.

Chapter 2

The Bike Shop



Bikes are pretty simple, but they do have a lot of parts. In this section we will learn the names of the parts. We will also learn how to buy a bike for your needs. We will decide when a part is working correctly, and how to keep it that way. We will learn how to select a bike to fit you. Let's start with the parts.

Names of Bike Parts

When you work on your bike, or ask a bike shop to assist you, it's nice to know the names of parts. When you use the same names the bike shop owner uses, you will be able to talk to him like an expert, and will understand which part to fix.

Before we go any farther, let's throw out two names of bikes that are incorrect — "girl's bike" and "boy's bike." The correct names for these bikes are the *open frame bike* and the *diamond frame bike*.

Up until recently, the best bike racers in America have been women, and they race on the diamond frame bike. As men bike racers get better, they will also be winning these races on the diamond frame bike. It turns out that the diamond frame bike is the strongest, lightest, and therefore most efficient of these two frames. On the other hand, the open frame bike is the easiest to climb on and off, so it is best for using when you wear certain clothing. We will refer to the diamond frame bike in our parts description.

Draw Your Bike

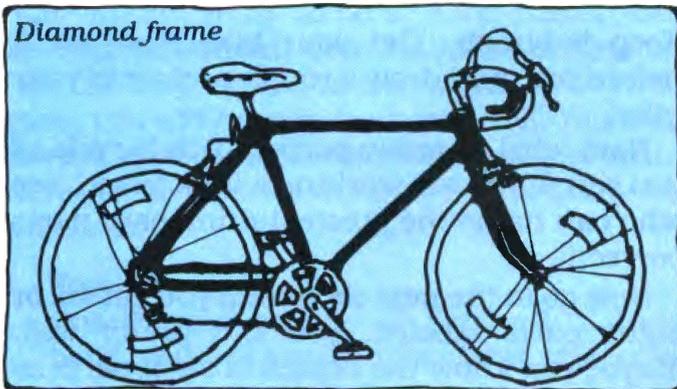
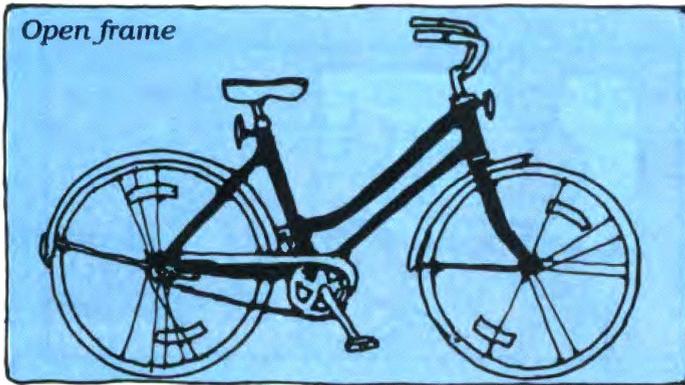
To see how much you already know, use the space here and draw a picture of your bike.

Keep it simple. Get your bike now, set it before you, and draw a rough picture of your bike.

Now, label as many parts of this bicycle as you can. If you are working with a friend, see who can name the greatest number of parts correctly.

Now go to the next section. If you got six or eight parts labeled, you did pretty well. Maybe you know the names of such parts as the wheels, frame, seat, handlebars, brakes, pedals, and fork. Most bikes have at least 100 parts, and there is a name for each part! You won't have to learn them all, but by the end of the next activity, you should be able to go back and label over 30 parts.

Draw Your Bike



The Frame

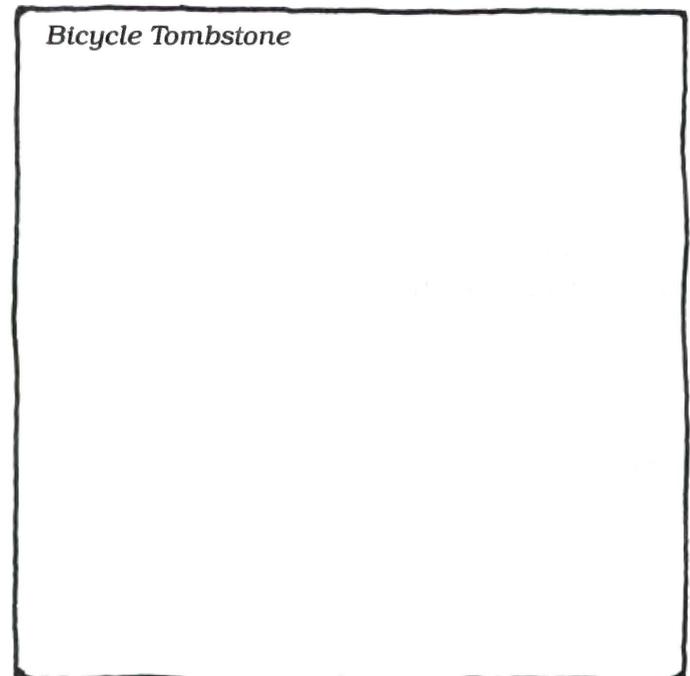
If you were to take your bike completely apart, removing everything but the paint, the piece that would be left is called the *frame*. Everything else attaches to this frame. To keep it light, hollow metal *tubes* are used instead of solid pieces. These tubes are either welded together or slip into *lugs*. Find these on the illustration. (See page 9.) Two of the tubes are so small they are called *stays*. These are the seat stay and the chain stay. The *seat stay* and *chain stay* are joined at the back of the bicycle to a part called a *rear dropout*. Find these three parts in the illustration.

The larger tubes also have names. These names are easy to remember. First, there has to be a bottom piece. We call this cylinder the *bottom bracket*. The one on top is the *top tube*. The one that goes from the seat to the crank set is the *seat tube*. The one that is at the head of the bike is the *head tube*. The one that goes from the head tube down to the bottom bracket is the *down tube*. Find each of these five tubes on the illustration.

Expensive bikes ridden by top racers are

super lightweight. Almost all kids' bikes are heavy. This can be good, since this way you get more exercise. These heavy frames can also take a lot of pounding as you ride over rough roads.

Be nice to your frame, since it can break if you do the wrong thing. Most frames go to the bicycle graveyard because some grown-up didn't see you park your bike in the driveway. Draw a bicycle tombstone in the box below to remind yourself what can happen to your bike if you are careless this way. Do you have a friend who left his or her bike in the driveway one time too many? If so, label the tombstone to show whose bike is there (example: Jim's bicycle).



The Wheels

Only two other parts must be added to make a bicycle move, the *wheels*. Although each wheel contains many smaller parts, we often think of them as one piece. The very first bikes only had a frame and wheels. Steering and braking didn't matter at first. Each wheel contains a *hub*, *spokes*, *rim*, *tire*, and *tube*. If you've ever taken a bicycle apart, you already know many things about wheels. For instance, there are two parts to the

spokes. Also, there is a *rim liner* to keep the tube from being punctured by the spoke ends.

The front and rear wheels on a bicycle are often identical, with one exception. The hubs are different. Rear hubs take more pounding, so they are bigger. Also, they have more parts if your bike has coaster brakes. The hub actually has about 40 more parts. In addition to an *axle* that holds the parts in place, there is a *race*, and 8 to 16 *ball bearings*. Find these parts on the illustration. If you did not oil your bike frequently, these parts would grind and groove until your bike wouldn't work. We will learn later about all of the places you must oil your bike to keep it working well.

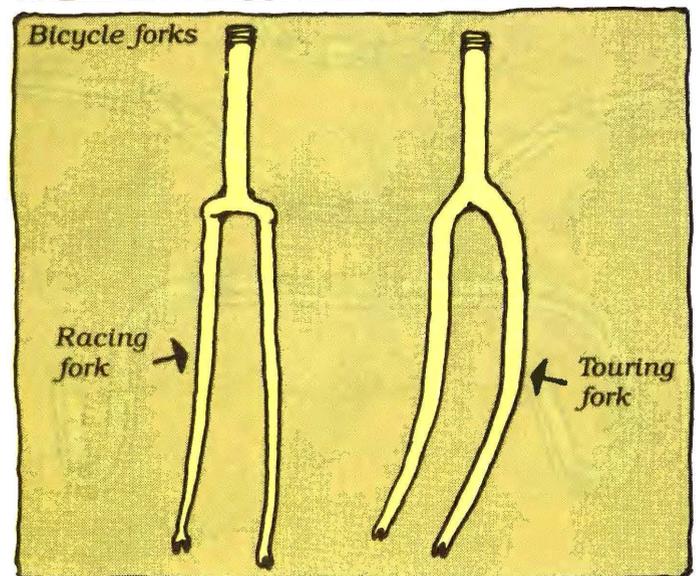
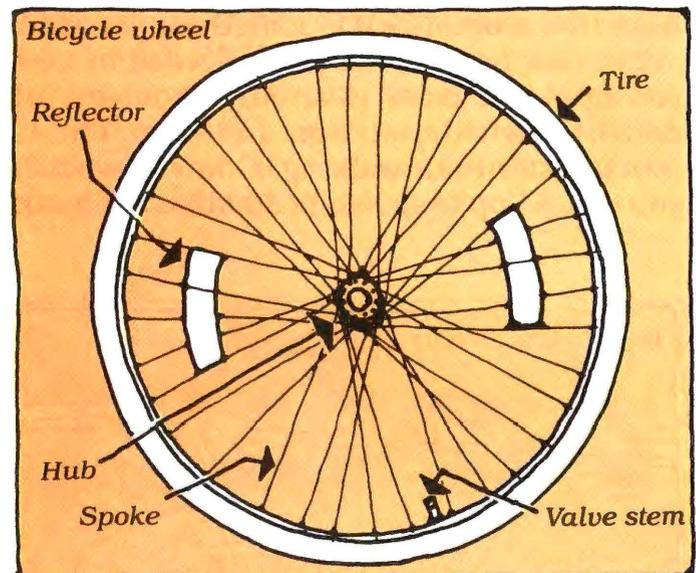
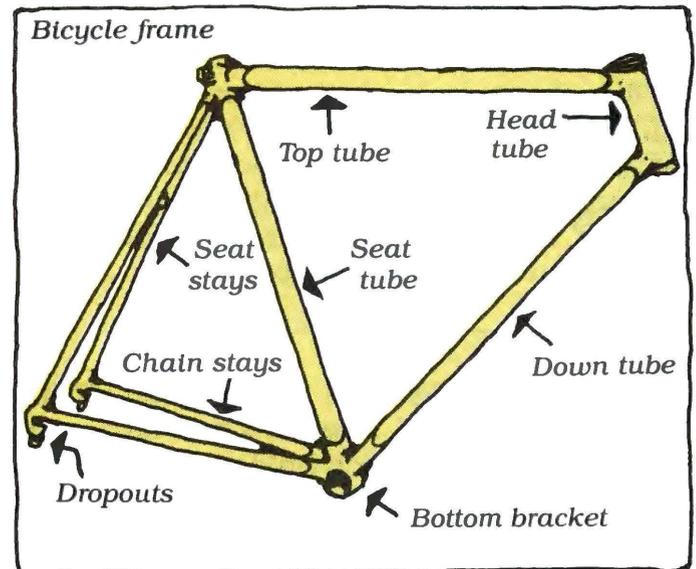
Your wheels are often the first thing to break down. You need to keep air in the tires to keep them round. There is a special word that bicyclists use to describe round wheels. They say the wheels are *true*. If the wheel is not round as it should be, they say the wheel is *out of true*.

The Fork

We can't actually attach a wheel to the front of a bike frame. We need one other part. We call this the *fork*. It inserts into the head tube. It glides back and forth on ball bearings and a *race*, so that it turns smoothly. See the illustration. It is actually possible to turn the wheels and steer a bike with nothing more than a front fork attached to the bicycle. Forks have two slots at one end to hold the front wheel.

The fork also has a *rake*. This is not another part, but instead describes how much the fork bends. The rake can either be shallow or deep, just like a pond can be shallow or deep.

With a small or shallow rake, the fork allows you to make quick turns. Racers like this feature. With a wide or deep rake, the bike turns more gradually and smoothly. Bikes for touring and town riding have this feature. Decide if your fork has a deep or shallow rake.



Handlebars

To make your steering work more easily, we must now add a gooseneck or *stem*, and a set of *handlebars*. These attach to the fork through the head tube to give you control. This is so that you don't have to stand on your head to steer the bicycle!

Seat

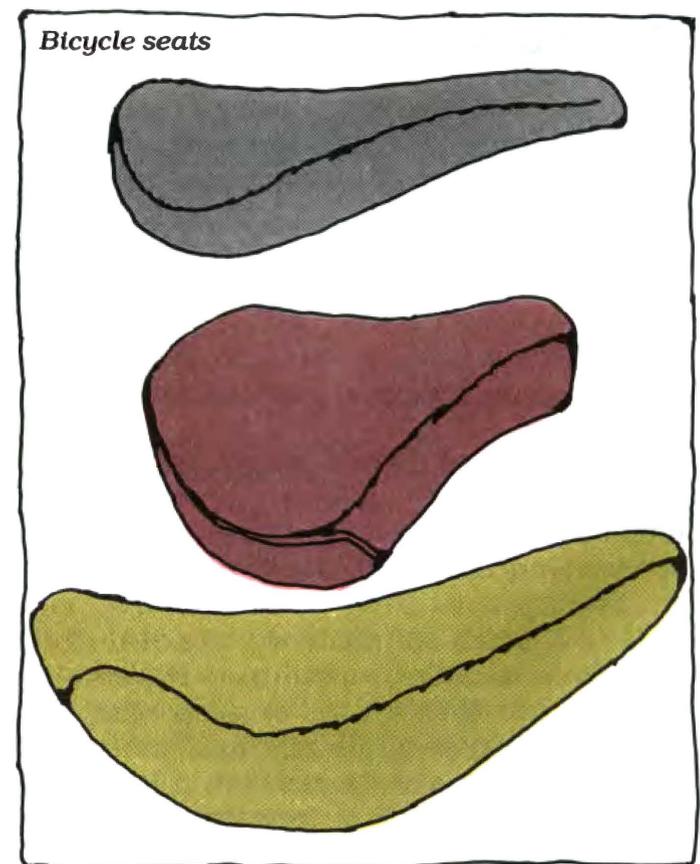
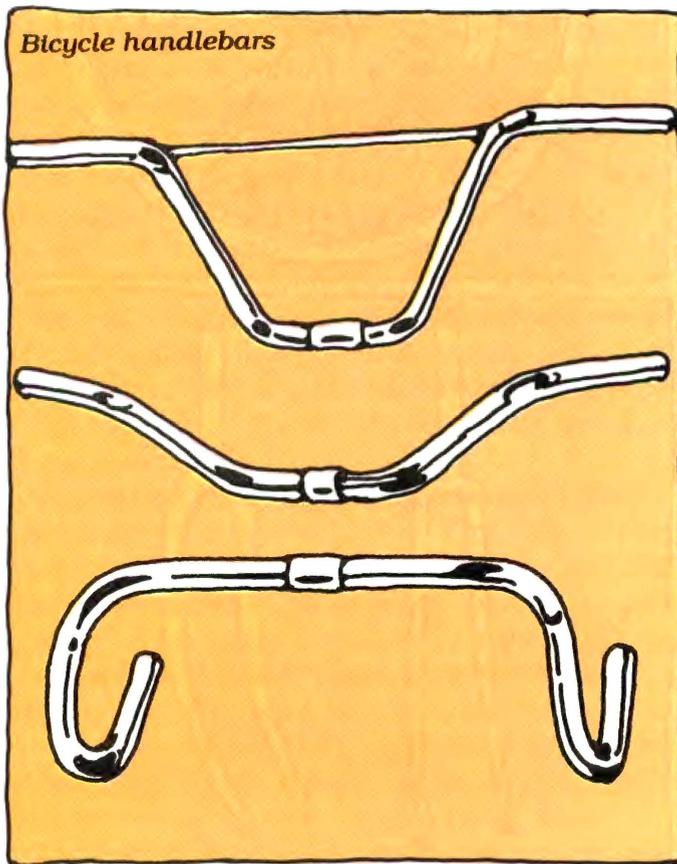
Bicycles are designed to be ridden sitting down, so we need a *seat*. There is a part called a *seat post* which holds the seat to the frame. Find these in your illustration. Note that bike experts, just like cowboys and cowgirls, refer to this part as the *saddle*. Perhaps this is because it is something you ride.

You now have all the parts needed to take you from one place to another. You can sit down, push with your legs, and coast. This is much faster than walking. Going downhill, you can get up to speeds of 60 miles per hour.

This is the way the very first bicycles were designed. Unfortunately, today there are other things we need to be concerned about, such as traffic. So you need several other parts. Let's talk about the most vital part on your bike first, the brakes.

Brakes

There are two types of brakes on bikes. *Coaster brakes* are the most common for kids' bikes. The only part you can see is the coaster brake arm. Everything else is inside, hidden from the rain, dust, and you. The other kind is a *caliper brake set*, usually found on both the front and rear of the bike. Since you work these brakes with your hands, some people call them *hand brakes*. Ask a grown-up what a caliper is. Many grown-ups do not know this word. Even if the grown-up you ask does know the word, go to a dictionary and look up the word. Do this now. Dictionaries usually illustrate a cal-



iper. Does this look like the caliper brakes on bikes you have seen? This should help you remember this word.

Since caliper brakes are exposed to rain, dust, and you, they often need more care. Since you probably will use a bike with caliper brakes as you get older, you will want to become an expert in keeping them working.

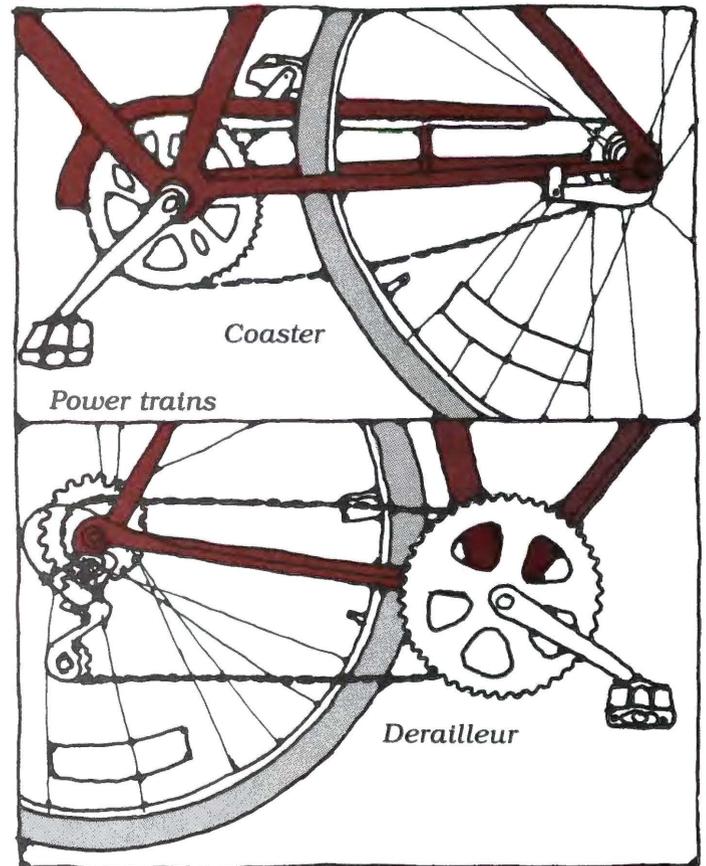
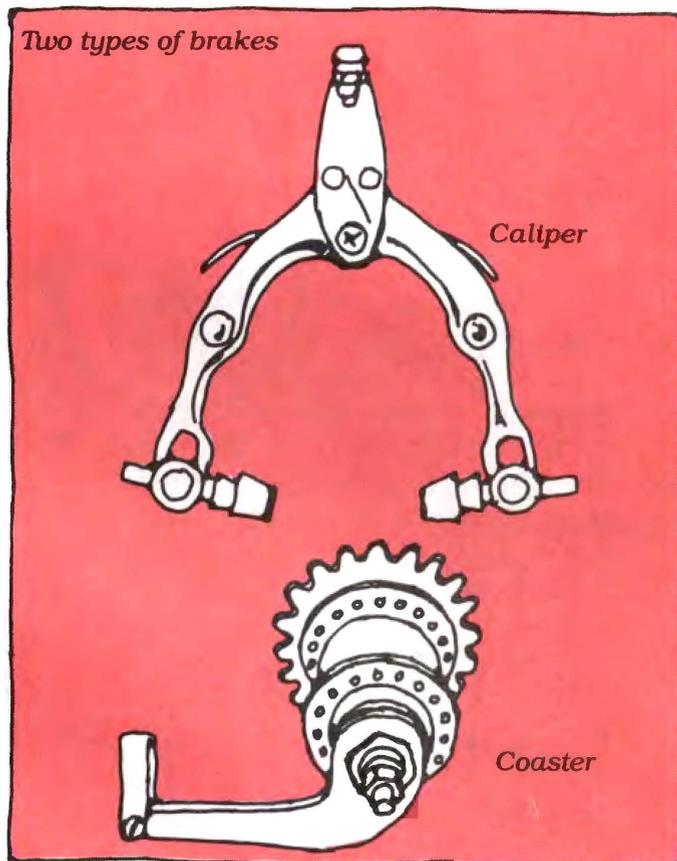
The Drivetrain

The only other significant part on the bicycle is again a collection of parts. It includes the *pedals*, *crankset*, and *gears*. Whether your bike has just one speed, or as many as 18, it will have this *drivetrain*. Using the picture you drew, add these part names to your bike.

Types of Bicycles

List here as many kinds of bicycles as you can think of:

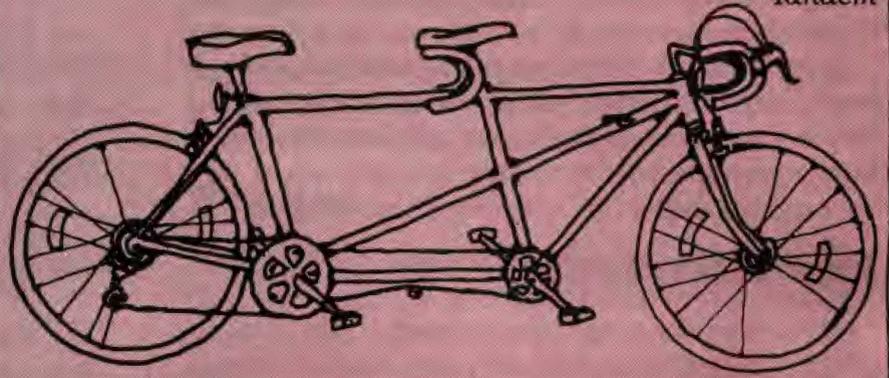
How did you do? Most students can come up with at least six different kinds of bicycles. There are actually more than 30 different kinds of bicycles! However, the most popular are *BMX*, *freestyle*, *racing*, *touring*, *commuting*, *all terrain*, *track*, and *tandem*. You can also say “open frame” and “diamond frame” bicycle. If you said “boy’s or girl’s” bikes, you weren’t paying attention to the



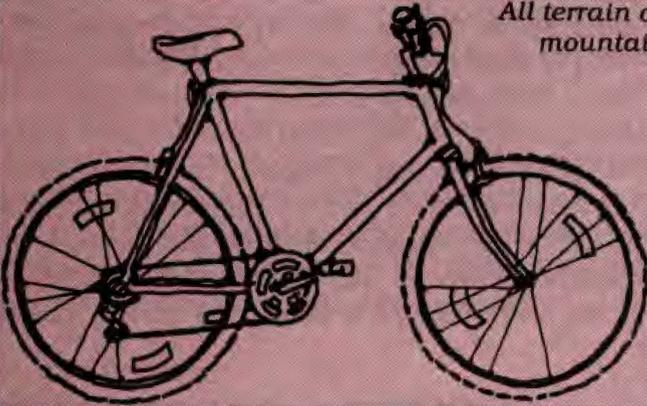
BMX



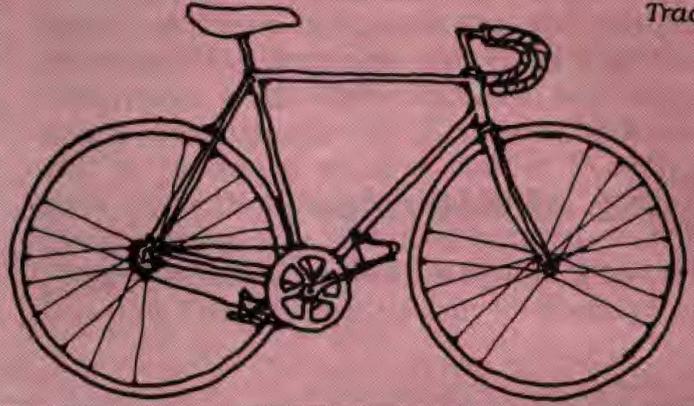
Tandem



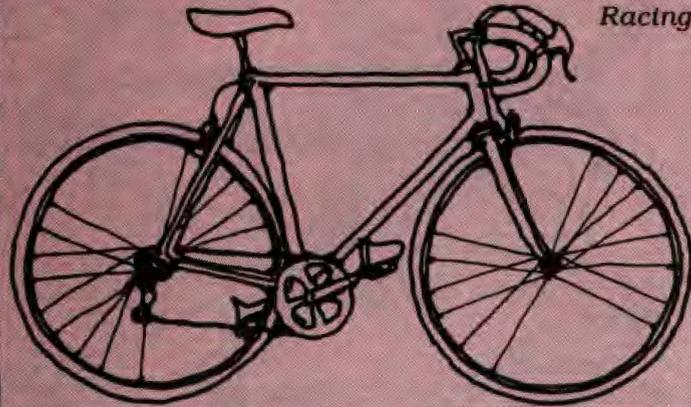
All terrain or mountain



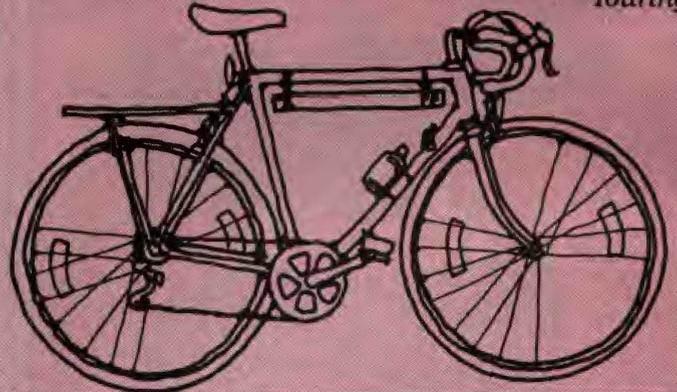
Track



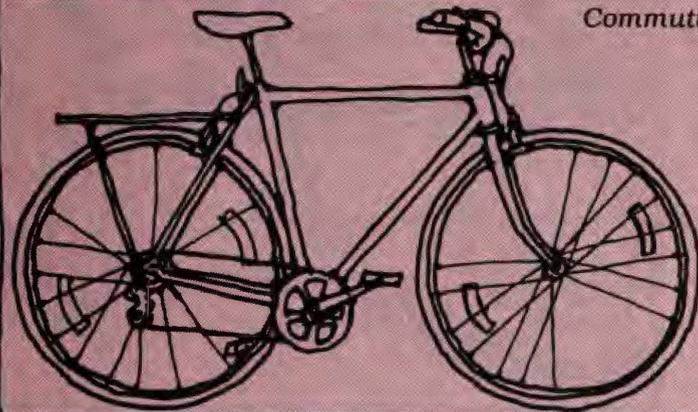
Racing



Touring



Commuting



Freestyle



last section. There are also three-wheeled bicycles, special bicycles for the handicapped (pedaled by hand), circus bicycles, water wheel bicycles, and even bicycles that fly! Bicycles cost as little as \$40 for some beginning bikes, on up to \$35,000 for the new bicycles ridden in the 1984 Olympics, and nearly \$300,000 for the Gossamer Albatross that flew the English Channel.

Which Bike Do I Choose?

If you already have a bicycle, or don't expect to get a new one soon, you can skip this section. Otherwise, the bike you pick is important. In the list below, check the type of bicycling you expect to do now and in the next two years.

- Riding to school, and to visit friends.
- Riding dirt trails.
- BMX competition.
- Freestyling.
- Exercise.
- Long tours (10 miles or more).
- Other racing.
- Other _____

You may already have an idea that most of the time you will use your bike for getting around. Most of this will be on neighborhood streets, a few dirt trails, and in a few parks. A simple one-speed coaster brake bike may be OK for this riding.

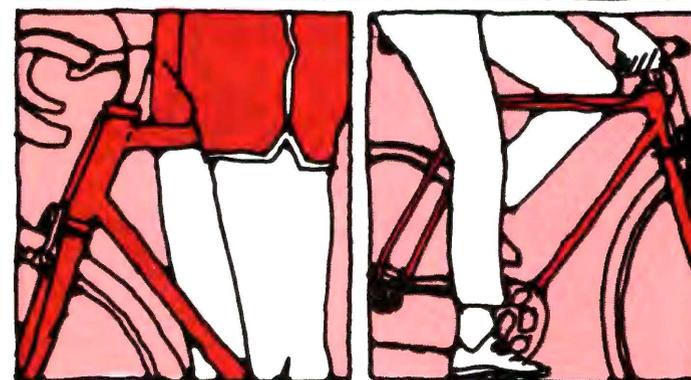
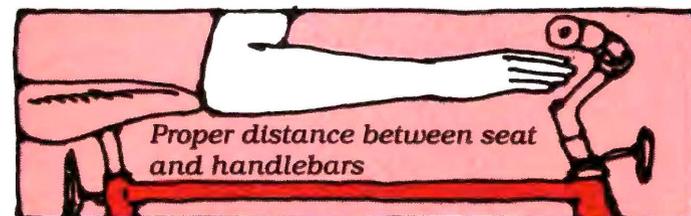
If, on the other hand, you and your family like to ride together on long rides, you want to get lots of exercise, or compete in BMX or other racing, you will want to consider a special bicycle. As you save your money to purchase another bike, talk to friends and bike shop managers about the bike you need. Here are some tips:

1. Buy a Bike That Fits. You must be able to straddle the top tube of the bicycle you buy. There should be no more than 1-2" of clearance when standing over this bicycle. If your bicycle does not fit, you will never become a highly skilled bike rider. A poorly fitted bicycle can even cause you to fall or collide with other vehicles or people.

2. Use the Type of Brakes that are Best for You. Caliper brakes (handbrakes) are not for everyone. Later you will learn that these are the best brakes for quick stops. But unless your hands are large and strong enough, you will not stop quickly, or even at all! Bike shop managers can help you decide when you are ready. Also, unless caliper brakes are kept in good condition, they will not work properly. If you cannot keep these working, do you have an older brother or sister, parent or friend that will keep them working?

3. Number of Gears. For most riding, just one gear is all you need. But if you have a lot of hills, or plan to do a lot of riding, you can get a bicycle with more speeds. Some of the choices you have are 3, 5, 10, 12, 15, or 18 speeds. These added gears do not always make you go faster. But they do make your trip easier by allowing you to pedal at the same rate.

4. New or Used? Not everyone should buy a new bike. Used bikes are often easy to find. They also allow you to spend your money on extra parts, tools, and protective gear. A used bicycle may also become a valuable learning experience, if you can get a friend or parent to help you recondition the bike. If you help fix up a used bicycle, you will be proud of it. You may



Comfortable straddle

Proper height

also end up with a better bike than one you buy at a department store. If you look for a used bike, add up the cost of all the replacement parts, and make sure it is still a bargain. Also, do some research at a bicycle shop to find out why some brakes are better than others, how to tell a high quality frame, and other tips. Good bicycle dealers will spend time going over these details with you.

Basic Repair

Your bicycle, just like your favorite pet or plant, needs regular care. If you have not spent at least one hour during the last year working on your bike, draw a half tombstone in the box below. If you have never oiled, cleaned, or even filled the air in your tires all the time you have had a bike, draw a full tombstone in the box below. Your bike may already be dead.

Probably no one has taken the time to show you how to care for a bicycle. This is true of most bicycles. Since no one else can take care of your bicycle quite as well as you, you must learn how to begin.

1. Tires. Tires need air. Too little air means you work harder, and kill your tires. Too

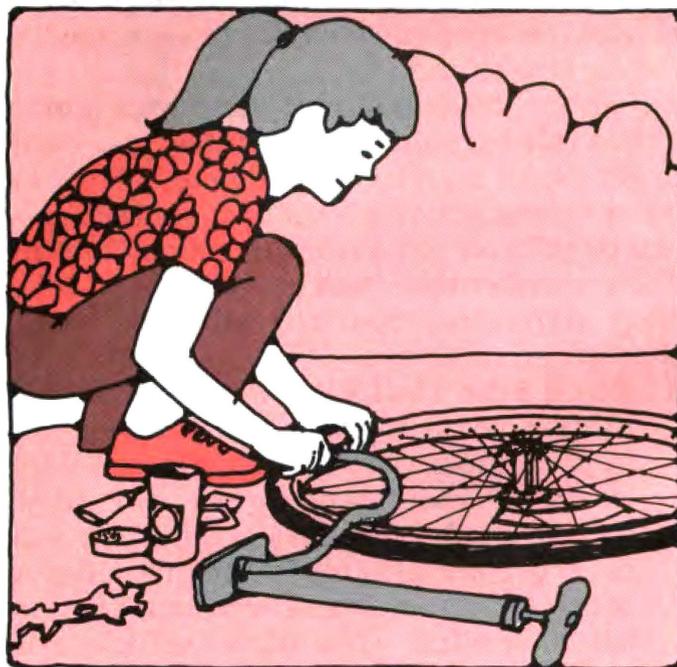
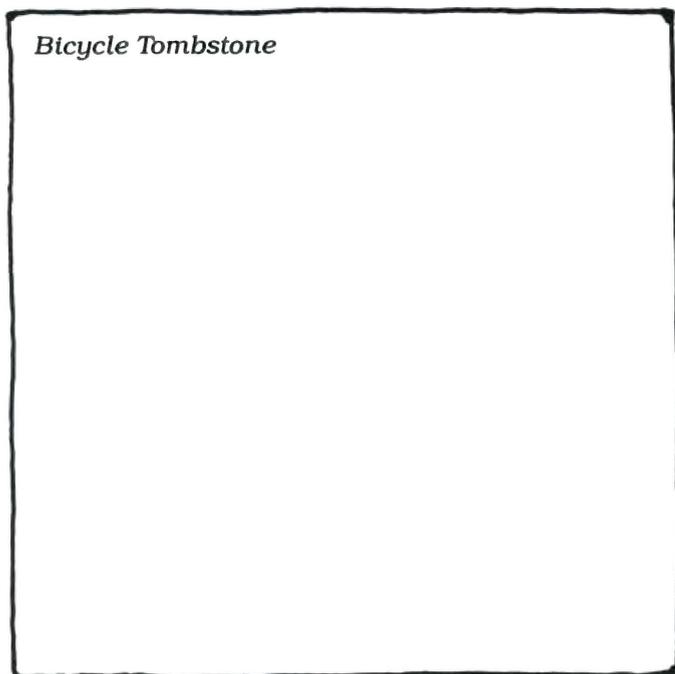
much air could cause a blowout. Check now to see if your tires are still good. Do they have little cracks on the sides? Are there bald spots any place? Is the valve stem in straight? Are there any bulges? Have any stones or glass gotten into the rubber? If the answer to any of these questions is yes, it may be time to correct the problem by removing the stone or getting a new tire.

To help your tires last longer, keep them well filled with air and do not allow any chemicals such as oil or gasoline to get on them. Also, park your bike in the shade, since the sun destroys tires.

2. Cleaning. Is your bike covered with mud and grease? If so, get out a lightly oiled rag, and clean every visible part. If you have not cleaned your bicycle in a year, it may take you half an hour to clean it. Once you have cleaned it, promise yourself that you will go over it with a cloth at least once a month. If you can stick to this promise, it will only take five minutes each month to keep your bike clean.

3. Brakes. Coaster brakes are easy to repair. Simply make sure the coaster brake arm is attached to the chain stay—otherwise

Keep your wheels in good shape.



you may not stop when you want to. You should also add several drops of oil (no more) to the hub, if there is a cap. Caliper brakes (handbrakes) are more complex. First, make sure that when you apply the brakes fully, there is at least one inch of space between the levers and the handlebars. If they touch, your brakes are too loose. A bike shop employee or another grown-up should help you make this adjustment the first time.

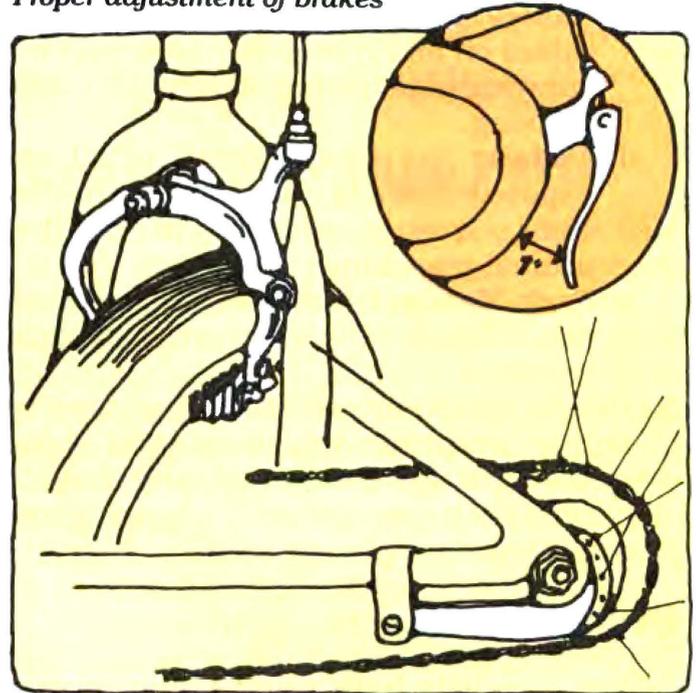
Next, are the brake pads worn? Do they sit flush against the rim? Is the rim bent, causing a blip, or requiring you to keep the brakes loose in order for the wheel to spin? Are the cables oiled? Again, you will want to have a grown-up go over these details with you the first time. A list of more detailed repair books is located at the back of this book.

4. Wheels. One of the most common ailments of bikes is a wheel that is no longer round or true. If your bike wheels wobble to and fro, get them adjusted by a bicycle shop. Without good wheels, you will not be able to ride straight. Also, your caliper brakes will not work well, and you will hurt them even more by riding on them. Wheels often go out of true because of an

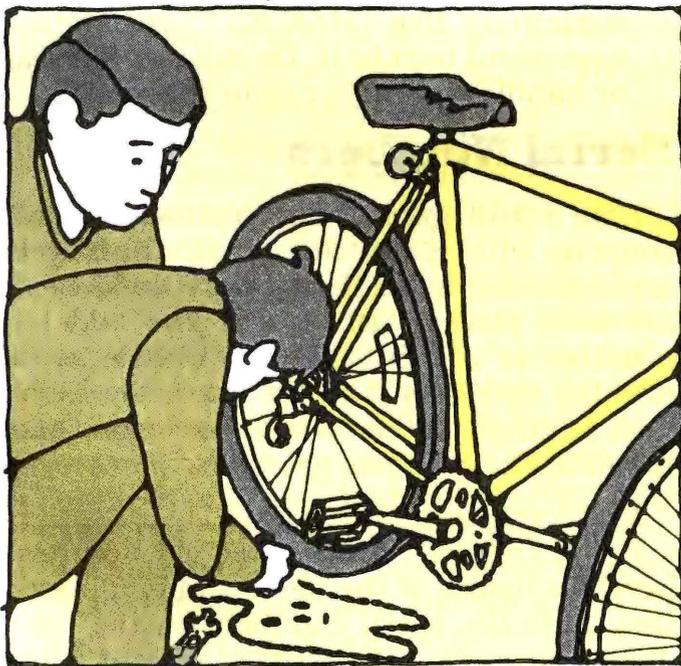
accident, or improper use of a bicycle. If your bike has wheels out of true, what happened to make them that way?

5. Oil or Lubrication. Keeping your bike parts well oiled is as important as watering a plant. And just like watering a plant, you can do it too much. You should oil your bike every month, or after each time

Proper adjustment of brakes



It takes work to care for a bike.



An out-of-round wheel will give you a bumpy ride!

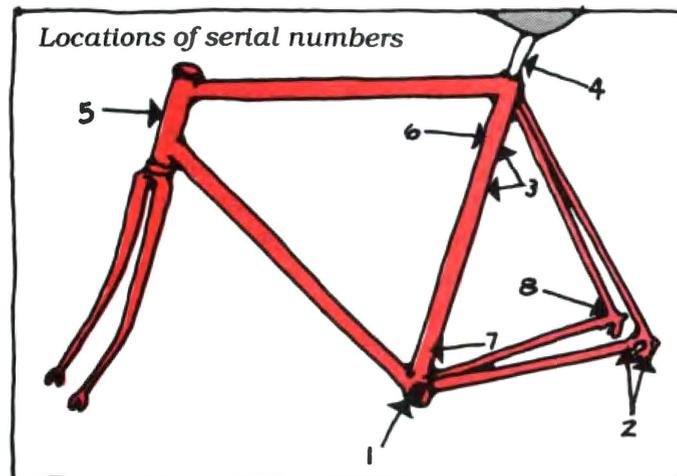
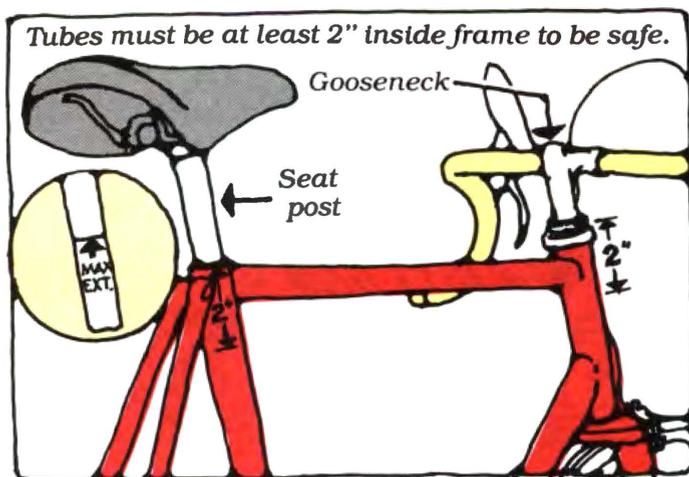


you leave it out in the rain. Here are the key places to oil or lubricate your bike:

- a. **Chain:** Use a spray lubricant, then wipe dry.
 - b. **Hubs:** Use a drop or two on all exposed parts. Note that once each year you will need to take the hubs apart to repack the bearings. Have a grown-up teach you this vital skill.
 - c. **Cables:** Lightly oil all brake and gear cables on all exposed surfaces, and by spraying penetrating oil into the cable housing.
 - d. **Pedals:** Use several drops of oil on exposed threads. Just as with the hubs, quality pedals will require annual repacking.
 - e. **Fork, Headset, Crankset:** Oil exposed parts lightly. Once per year, repack bearings.
- 6. Other.** Make sure all handlebar tape is tightly wrapped, your seat and handlebars are tightly fastened, and that all parts, such as pedals, are in good condition.

Proper Fit

Most bicyclists have never been properly fitted to their bicycles. If you are not sure if you have been fitted to your bicycle, you probably haven't been. Until you are fitted, you will have to work harder than you should, and you may lose control of your bike. This



could cause you to fall or to collide with something. Here are some tips:

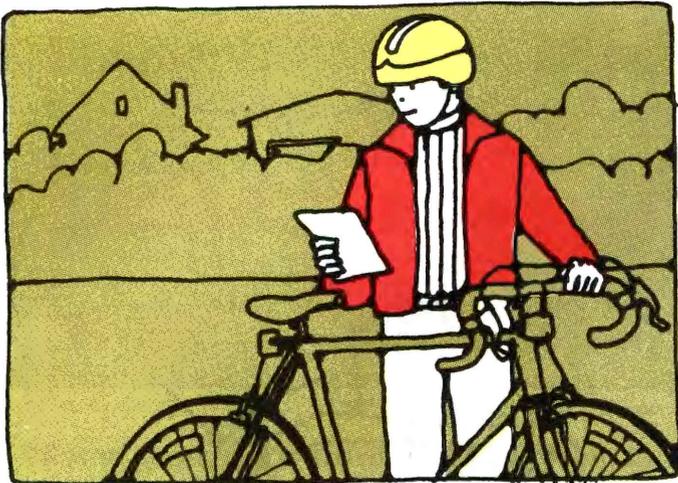
1. **Seat Height.** When you sit on the bike with your foot on the pedal in its lowest position, your leg should be almost straight. Your seat should be firmly fastened, and level.
2. **Handlebar position.** For upright bars, the common position is slightly above the level of the saddle. Dropped bars, found on 10-speeds, should be parallel to the seat.
3. **Caution.** At least two inches of both the seat post and handlebar stem should be inside the frame. Look for a mark with something like "MAX EXT" (maximum extension) next to it. Do not put the seat or handlebars higher than this mark.

Serial Numbers

Here is a fun game the bicycle makers have come up with. Each tries to hide the bicycle serial number in a different place. In all there are seven places. Without any clue, take ten minutes to try to find your bicycle serial number and enter it on the line below. Good luck finding your serial number if your bike is hidden in mud and grease.

My bicycle serial number is: _____

If you couldn't find it after ten minutes, here is a listing of the most common places they hide the serial number: on the handlebar stem, on the seat post or seat tube,



Go over a checklist before you ride.

near the rear dropout, or under the crank set.

Now find your serial number if you didn't find it before, and enter it on the line provided. Keep this number on file, in case your bicycle gets stolen. *Hint:* It is easier to find your serial number while you are cleaning your bicycle. Why don't you take a break from reading now and go clean your bicycle and find your serial number at the same time?

Quick Check List

Bicycle racers and other experts always check over their bikes before an important ride, and always at least once per week. You should do the same. Here are the simple steps of a quick check:

1. **Tires.** Are they properly inflated, with no bulges, cracks, or worn areas?
2. **Wheels.** Spin each wheel. Is it round (true), with no wobbles?
3. **Brakes.** If you have caliper brakes, there should be at least one inch of clearance when they are squeezed. The brake blocks should be firm and flush with the rim. Cables should not be frayed. If you have coaster brakes, be sure that the coaster brake arm is attached to the chain stay, and that the bike stops quickly.
4. **Handlebars.** With handbrakes applied, push the bike forward, then back. Is there any play in the handlebars?

5. **Crankset.** Grab either pedal with your hand. Pulling out or pushing in, is there any movement?
6. **Seat.** Is it fastened tightly, and is it level?

Summary

If you have read and gone through each of the exercises in this section, you should have a good idea of just how simple yet delicate your bicycle is. Take time to practice the maintenance steps discussed. To help you learn the names of your bike parts, consider the following activity.

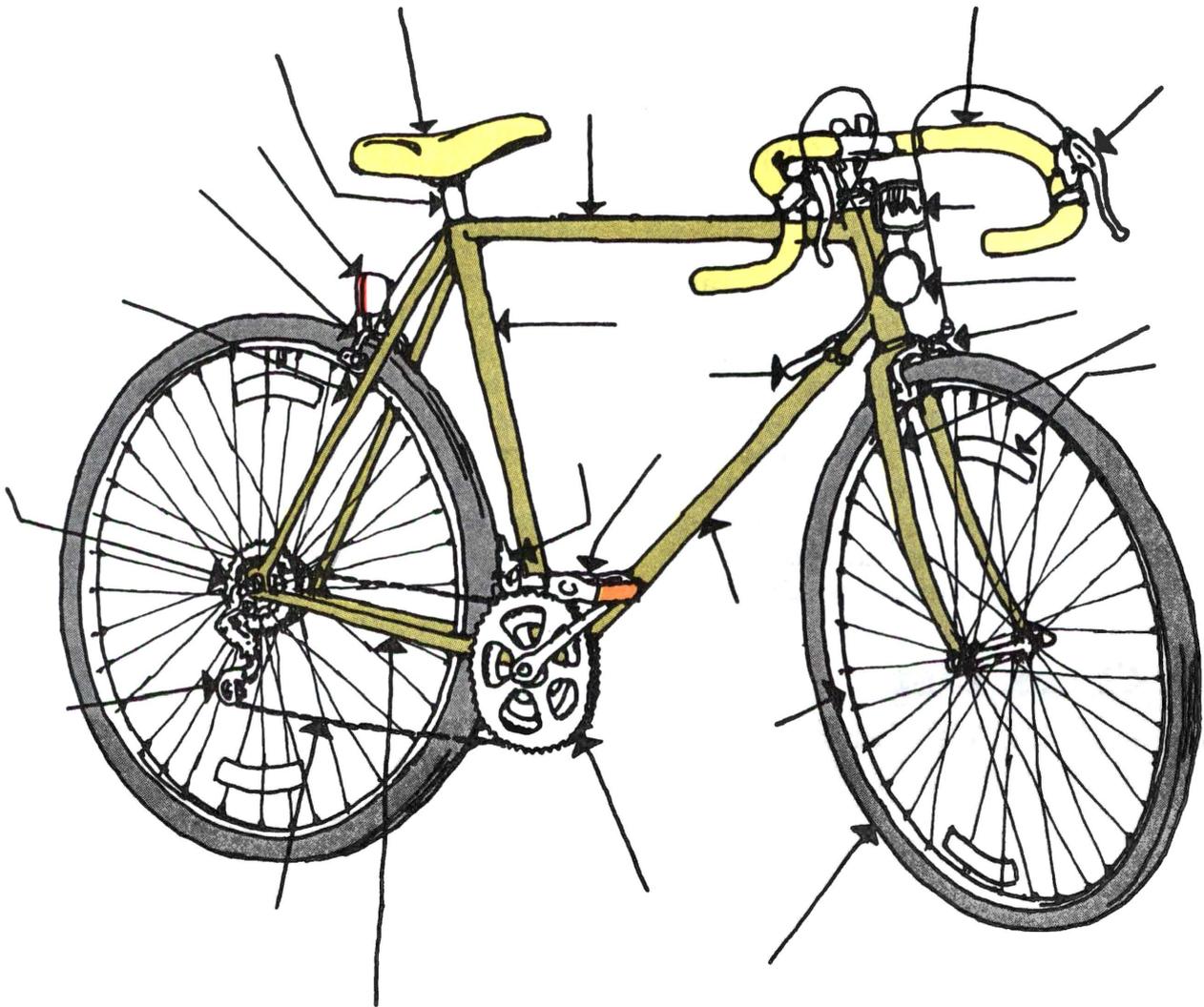
Naming Your Bike Parts

Get a roll of masking tape (no other tape please). With a dark pen, write on the tape the names of each part that you see in the illustrations on pages 9, 10, and 11. Now place these labels on the bike parts, and keep them there for one week. Test yourself at least once per day by reviewing the names. As you memorize each part, remove the label. See how many days it takes to memorize all names. **Caution: remove the tape after one week,** or the sun could cause the tape to stick.

When you think you know all of the names, test yourself by naming as many parts as you can on the bicycle in the illustration on the next page. When you are finished, turn back to the pictures of the bikes with the named parts on pages 9, 10, and 11 to see how you did.

Tape names of parts to learn them.

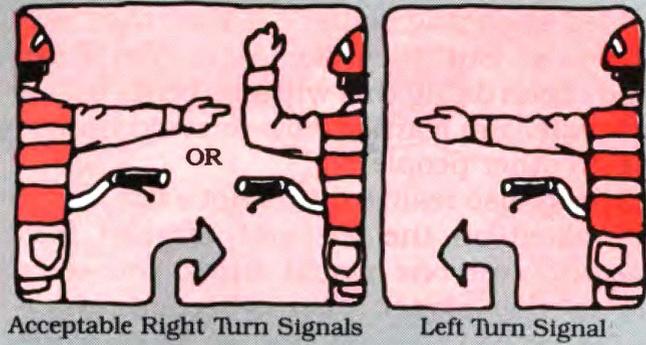




Label all the bike parts you can.

Chapter 3

Bikes Are Vehicles



Some grown-ups think that a bicycle is a toy. It is not. When you were very young, you used bicycles as toys. But once you were ready to go places with a bicycle, it became something else. It became a *vehicle*, something that takes you somewhere.

So, if you use your bicycle for anything other than play in a park, or your backyard, it is a vehicle. That is because it gets you where you want to go.

Below, list the last five times you were on a bicycle. In which of these were you using your bicycle as a vehicle? In which were you using your bicycle as a toy?

TIME	VEHICLE	TOY	BOTH

If you checked that you were using your bicycle for both at the same time, draw a tombstone to the right.

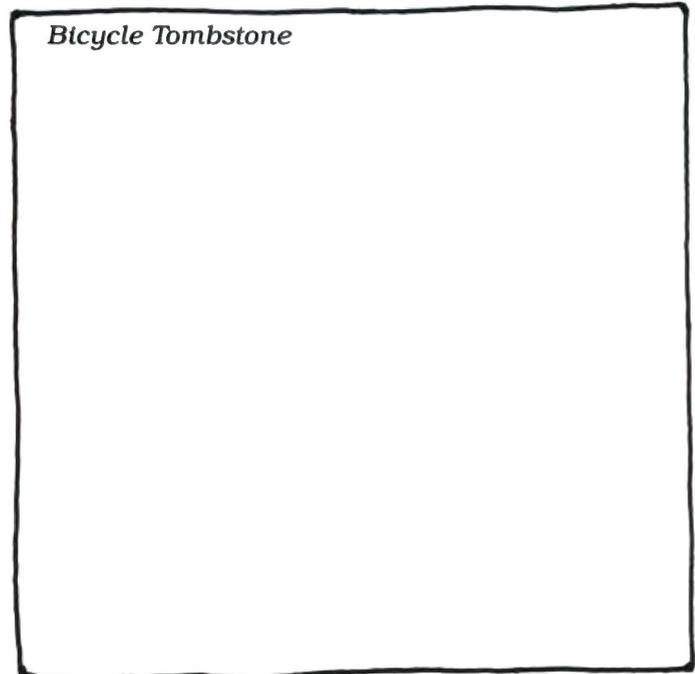
Good bicyclists know how to use their bicycles correctly. Promise yourself that you will not play in the street with your bike in the future.

The bicycle as a vehicle has the same legal status as a car, a truck, or an airplane. It has a right to travel in public places.

Along with this right to go places, are a lot

of rules. You probably have most of these memorized. "Ride to the right, ride single file in traffic, and stop at stop signs and red lights." Not only is it smart to follow these rules, it's the one way to have other vehicle operators respect you.

Vehicle laws are based on speed. The faster you go, the more rules you must follow. Very fast vehicles, like jets, have at least a half-dozen people watching over them, both in the air and on the ground. If you are outside of a vehicle altogether, like when you are walking, very few people notice you. The main rule when walking on a sidewalk or in a crowd is quite simple: "Walk to the right." How long does it take your younger brother

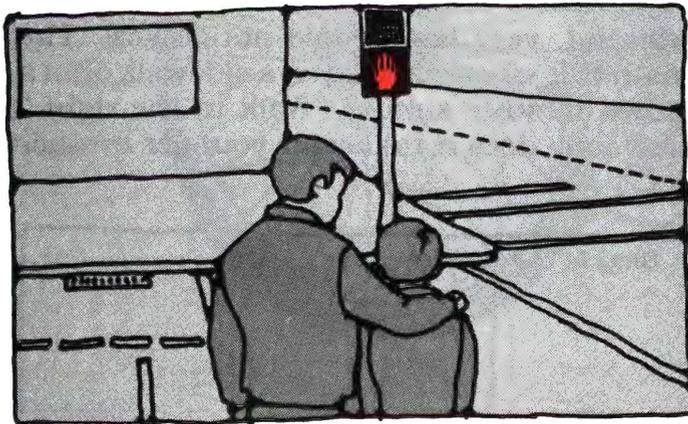


or sister or friend to learn this rule at a crowded shopping center? It may take several years. But they do learn. You have already been doing this without being told it was a rule. You learned how to avoid bumping into other people.

You may also realize this is not a law. But if you walked on the left and crashed into someone, everyone would think you were from another planet. That is because everyone learns the correct way to pass while walking.

All of our traffic laws are simply rules such as this that people have developed to avoid collisions.

When you are on a bicycle, you travel about three to five times faster than when you walk. That is why you need three to five times as much space to get around, and why there are at least three to five times as many rules. Otherwise people walking (*pedestrians*), can get hurt. Perhaps even you would get hurt. One important sidewalk rule is for the



Learning why rules are needed.



There are different rules for different vehicles.

bicyclist always to let a pedestrian know he is passing. He can do this by saying "On your left," and then passing slowly on the left. List other sidewalk rules you have learned:

Once you begin traveling in a street, even more rules apply. This is because you are now in the world of other vehicles that are heavy and travel at fast speeds. These vehicles are so big that their drivers may not be able to see you. Automobile drivers cannot see as well as bicyclists, cannot turn as quickly, and cannot stop as quickly. Truck and bus drivers have even more problems.

So, when you travel on a roadway, you must abide by the same rules as these vehicles.

Special Rules

Apply to Bicycles

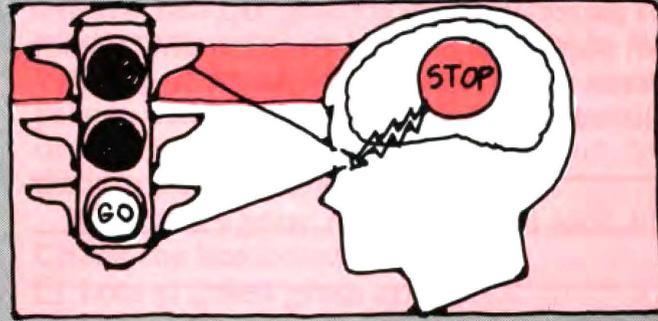
Truck drivers have more rules to follow than car drivers. That is because they carry such big loads, and they cannot stop quickly. For example, they cannot travel through most neighborhoods, unless they are making a delivery. They are not allowed to use certain lanes. Just as truck drivers have special rules, bicyclists have added rules, too. List those you know of here:

1. _____
2. _____
3. _____
4. _____

The rules most students list are: Ride to the right, ride single file when traffic is present, do not ride double, and yield to pedestrians. There is a list of other rules on the back of this publication.

Chapter 4

How Much Do You See?



Most of us have never thought about teaching our brain to see. Our eyes are like a camera. Both cameras and eyes let light pass through, but are completely dumb. Neither one knows what is important. So, they both send everything. Right now as you read, your eyes see everything in the room, besides the thousands of tiny ink dots and white paper in this book. All of this is being sent to the brain. But if you are concentrating on reading, your brain will only see the black print. This is because you have taught your brain to look only at the black print. So, many other things going on in the room are not being seen.

One reason for this is that our eye only has a little bit of sharp vision. To see what we mean, go get a flashlight, and turn off the lights in the room. Move the flashlight around from object to object. The small lit area at the end of the light beam is about the same amount of space that our sharp vision will see. Scientists call this our *foveal vision*. Notice that there is plenty more that you actually see. All of the rest of this vision is fuzzy. On the very outer edges we do not even see color.

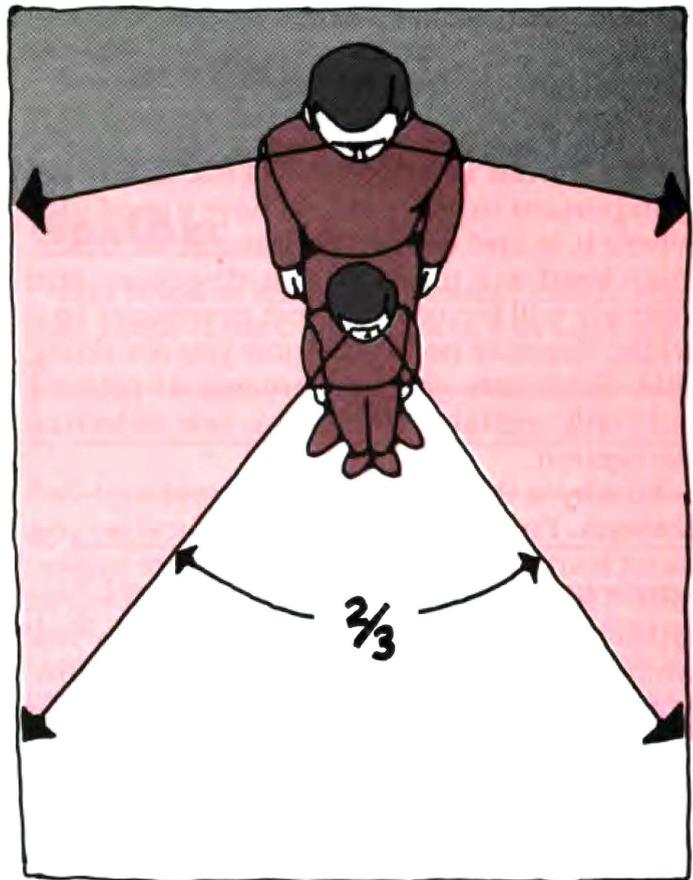
What does this teach us? As you ride your bicycle, it is important to keep your eyes moving. You need to search both sides of the roadway, look up into driveways, and check both sides of an intersection well before you get there. Look to your right side, look to your left, and once in a while, look back. If you don't look back, you will never see objects that could enter your path.

Do adults see better than kids? Studies

have shown that kids have less actual vision than adults. The illustration here shows that very young kids only see two thirds of the area an adult sees. This is another reason to move your head and eyes from side to side to search for important things at all times. Next time you ride, train your brain to see things by keeping your head moving. This next activity will help:

Look around you for the next 10 seconds.

A child's peripheral vision is $\frac{2}{3}$ that of an adult.



Now, shield your eyes so that you can only see this paper. Without looking up, list the ten most significant things in the room. If your parents or a friend are present, have them make a list, too.

What is on your list? If your favorite pet is in the room, chances are good that he or she is on the list. Probably so are any friends or family members, the TV set, and perhaps something you have recently tripped over. In other words, you see the things that are important to you in some way.

If a friend or grown-up is making a list at the same time, what is on their list? At least several things will be different.

Why We See Some Things and Not Others

When we teach our brain to see, we are telling it what is important. If the family pet is important to you, you will have a good idea where it is and what it is doing at all times. Your head will move in that direction, and your eye will focus on the pet every once in a while. You may not even know you are doing this. Scientists call this process of picking out only certain things to see *selective perception*.

So why is this important in bicycling? Two reasons. First, when you ride a bicycle, you must learn how to see things that are important. There are hundreds of things moving or sitting still that are very important to you when you ride. The faster you go, the more important each item becomes, and the less time you have to pick it out. That is why people who speed in a car at 70 to 90 miles per hour may not live long. They may not see something important in their path until too late.

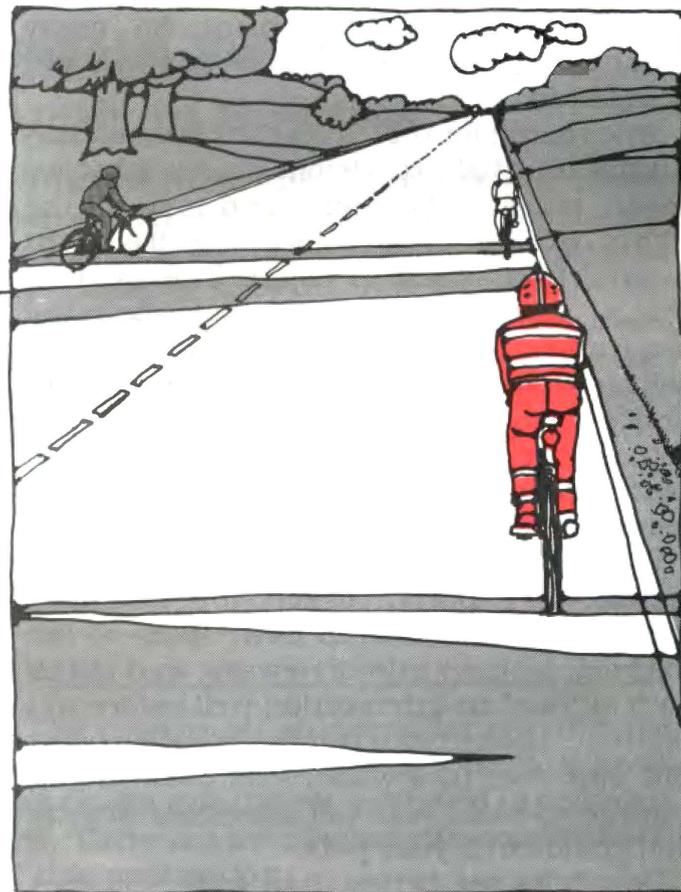
Later in this book we will teach your brain to see things that are important if you are to avoid falls or collisions with things that could hurt. You will need this skill every time you ride your bicycle.

It is also important for you to know that other people may not have trained their brains to see bicyclists. On their list of ten most important things to look for in a roadway might be big trucks, other cars, traffic signals, traffic signs, police cars, buses, trains, ambulances, and fire trucks. Since bicyclists cannot hurt them, and they aren't looking for bikes, the car driver may not even see you!

This is why you should always make yourself easy for motorists to see. We call this being *visible*. You need to be visible to all the motorists in your neighborhood, or anywhere you ride.

So how do you make yourself more visible? Expert bicycle riders have several tricks they have learned. Try the game that follows.

Which rider is most visible?



Have a friend or grown-up place a piece of paper over the picture on page 22. Then, have them remove the paper for just two seconds, and then cover it up again. How many bicyclists did you see? Which did you notice first? The one in bright red pops right out. This rider is also in a shaft of light, which lights him brightly. This helps the eye detect this bicycle rider first.

On up the road is another bicyclist on the right. This rider is wearing white, so you will see him, but not as quickly. Why? The rider is farther away and not lit as well. In *this* scene, white doesn't show up as well as red.

Did you see the third rider? This one is not on the right side of the road, and is wearing black. Many motorists would not have seen this bike rider until too late.

List three rules this illustration teaches:

1. _____
2. _____
3. _____



On your list should be such things as: Always ride on the right side of the road where motorists are looking for traffic. Wear brightly colored clothes such as orange, yellow, white, lime green, or pink. Avoid colors such as black, dark brown, dark blue, dark green, or camouflage.

What does your neighborhood look like? Check the box below:

- Lots of green grass and trees.
- Lots of sand, brown dirt, and desert plants.
- Lots of white buildings and white sand.

In some neighborhoods white would work well. In others, it would not be wise. Which neighborhood listed above would be the worst one to wear white during the day?

Go to your closet. Separate your shirts, blouses, or dresses into two sections. Put those that make you more visible in one area. Put those that do not make you more visible in another. The ones that make you more visible to people will be your cycling clothes.

Next time you go shopping for clothes, ask your parents to help you pick out a jacket or sweater that makes you more visible.

Weather

List below at least four weather conditions that make it hard for motorists to see you:

1. _____
2. _____
3. _____
4. _____

Did you include in your list rain, fog, snow, dust storms, and humidity or frost? Any of these kinds of weather which you have in your area will make it hard for the motorist to see.

Another constant problem, usually from about 4:00 p.m. until night, is sun glare. If a bicyclist can see his shadow directly in front of him as he rides, what does this mean?

Here's a hint: If the motorist is looking down the road at the cyclist coming toward him, what will the motorist also be looking at? Now, if the motorist has a dirty windshield, what will he see?

From the example above, what rule can you make that alerts you to a time when a motorist may not see you? Write your rule in the space below.

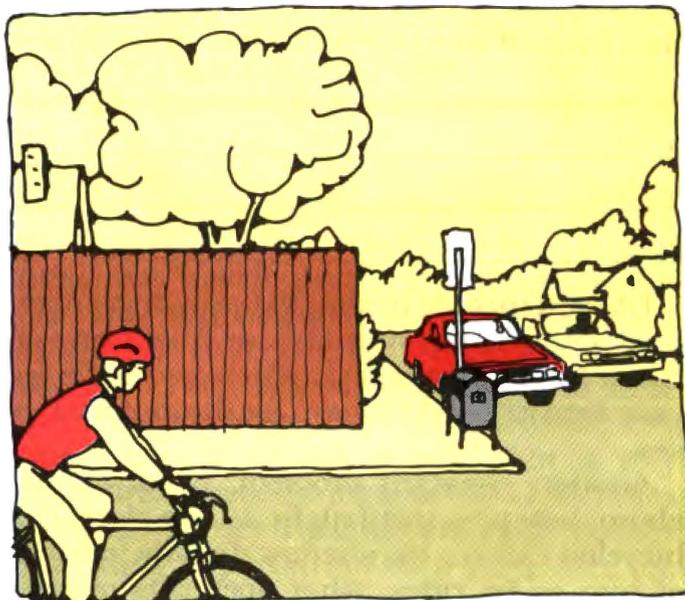
Things That Hide You

Finally, if you enter the road where there are parked cars, shrubs, or buildings next to the road, the motorist will have trouble seeing you. This is especially a problem when you leave a sidewalk to enter the street. Think of a rule you can make that will allow you to enter any roadway without being hurt. Write it in the space below.

Some rules others have written include:

1. Go to a clear area away from parked cars.
2. Always walk a bike to the street. Start riding at the curb when there is no traffic.

What objects hide you from a motorist's view?



3. Plan a route away from parked cars and shrubs.

Night Riding

Riding during twilight or at night can be a problem. Most people are tired, their eyes don't work as well, and some people get drunk at night. They won't see you unless you are using bright lights. That is why even most experienced bicyclists put their bikes away at night.

Orange and yellow colors will not work as well. Now it is best to wear white. White reflects light from any source of light, such as a car headlight or a street light.

But this is not enough. Retro-reflective cloth sewn on a jacket, reflective dots on the back of your shoes, and other reflectors will make you more visible. It is also important to have a working white light on the front of your bike, and a working rear light. Use these besides your red reflector.

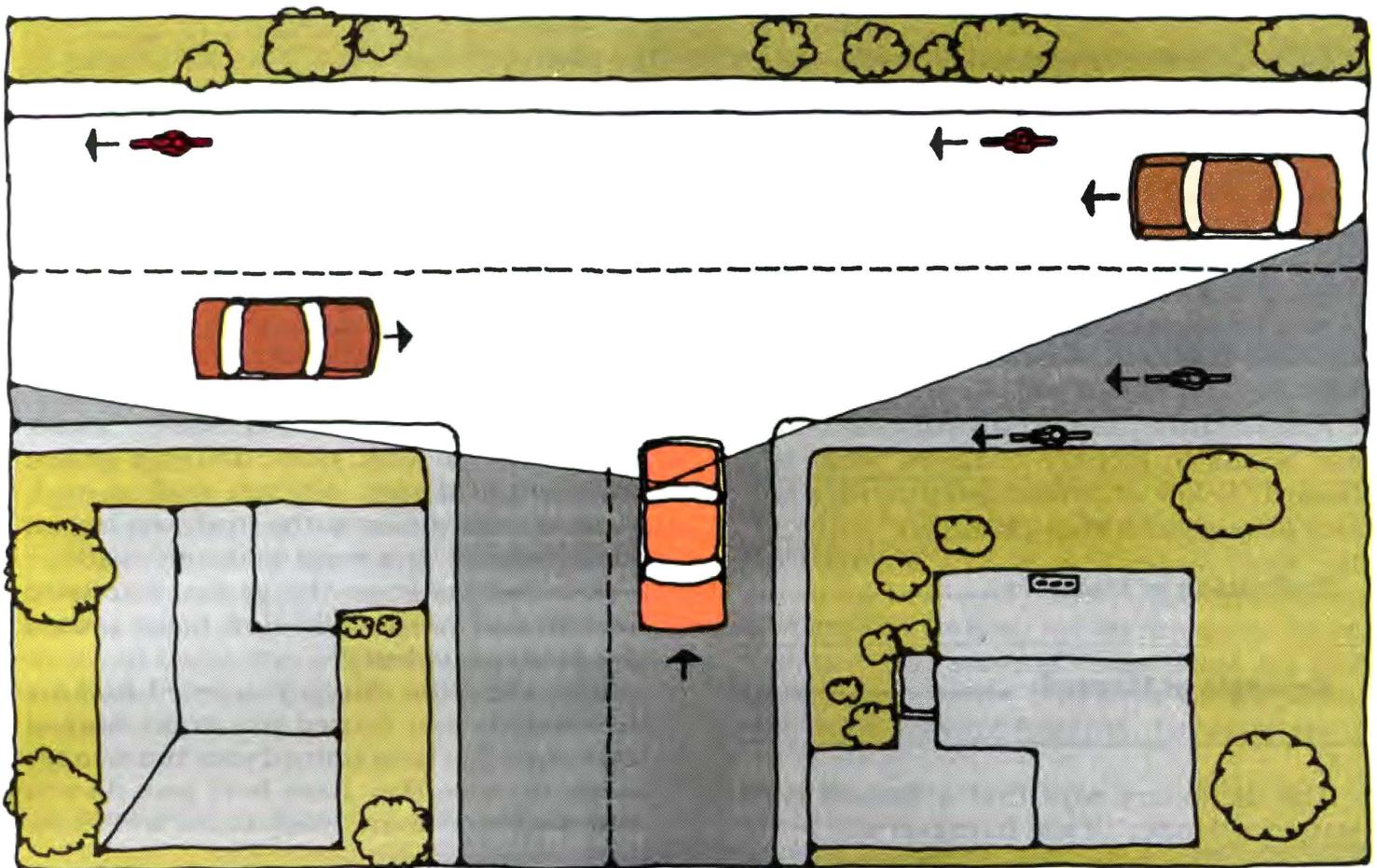
Even with these steps, it takes a lot of skill to ride safely during twilight and night. If you are going to try it, take a special course, or ride with an expert for the first several times.

Wrong Way Riding

The law in all states requires bicyclists to

Which rider is most visible?





What could go wrong with wrong way riding?

ride with the flow of traffic. Even some grown-ups are confused about this rule. Pedestrians are supposed to walk facing traffic, so why can't bicyclists do the same? First, bicyclists cannot leave the street the way pedestrians can. Second, bicycles go too fast for either the bike rider or motorist to react.

If you ride in the street, all traffic goes just one way, on the right side. All the signs point this way. All of the traffic lights face this way. All of the motorists look for traffic to be moving in this direction.

Look at the illustration here. Notice that the lighter area is where a motorist looks before entering a road. He will not see any bicyclists riding against traffic in the street or on the sidewalk. Even if the motorist looks this way, his brain will say to him, "Nothing should be here, just ignore it." So he will ignore it and pull out. This will trick the

bicyclist because he saw the motorist look his way. Some drivers may turn left across your path. Some drivers may turn right across your path. Some drivers may pull out to pass a car, then find a bike rider immediately in front of them. Added together, this means that wrong way riding hurts many bicyclists every year.

Always help the driver by being predictable. Ride where all traffic should be at all times. Go with the flow of traffic. Even when you are on a sidewalk, it is best to cross the street to put yourself on the side where motorists expect traffic to flow.

Then, always slow at intersections. You will be much safer if you always assume the driver does not see you. Wait until you know what he is going to do before you enter the intersection. You will be acting like the best bicyclist on earth!

Bicycling Hazards



Another thing that is important is to train our brains to identify *hazards*. What is a hazard? Below write your definition of a hazard. Also, give an example.

Definition of Hazard: _____

Example of Hazard: _____

The dictionary says that a hazard is “a source of danger.” If you have ever run into a park bench or a fire hydrant, you may have listed one of these as your example. A motorist would not see either of these items as a hazard. You may also have been chased by a dog. Is a dog a hazard when you ride?

In this section we will list hazards in four groups. This will help our brains to pick them out as we travel.

1. Surface Hazards.

The first group of hazards could cause you to fall or swerve. Most motorists do not even see these, since with four wheels, they do not fall over. Think of things on the *surface* of the sidewalk or street that can be hazards. Try to list at least ten hazards.

Did you include any of these items on your

list? Cracks in pavement, potholes, rocks, sand, water puddles, glass, drainage grates, crumbled road edge, concrete spill on road, snow, ice, dead cats in the road, wet leaves, oil in the road, tree roots in the sidewalk.

How many of these things that you listed have caused you to fall? How many caused you to turn suddenly?

Most likely the things you listed first are the hazards that caused you to get hurt at least once. You have trained your brain to see them, because they have hurt you. As you ride more and more, your brain will know what to avoid.

Before teaching your brain new tricks, let's list the other types of hazards.

2. Stationary Hazards.

We call hazards that do not move *stationary hazards*. These stationary hazards can get in the way when you ride and can cause you to get hurt. Make a list of at least six of these stationary hazards.

What things did you include on your list? Did you include any of these items? Park bench, signpost, fire hydrant, parked cars, parked bicycle, newspaper stand, tree, fence, or mailbox. Which of these items have you run into? Tell your brain to watch out for these things, too.

3. Moving Hazards.

Things that can move into your path can hurt you more than any of the earlier haz-

ards. The bigger the object, the more it can hurt.

Now make a list of *moving hazards* that could be a problem when you ride a bicycle.

Which of these items are on your list? Trucks, cars, buses, bicyclists, dogs, pedestrians, trains, kids in the yard, alligators, or rolling balls.

Sometimes it's the biggest or scariest items you list first. We hope you have never run into any of these items, or had any of these items run into you. It will take lots of skill to avoid these hazards as you ride farther and faster. You will have to have a brain that sees these hazards early enough to react.

4. Visual Hazards.

Our last category of hazards is the trickiest of all. These are things we do not usually see as hazards until it is too late. List at least ten things that can block your vision or block the vision of a motorist so that he cannot see you, just like a screen blocks your vision.

Did you include any of these items on your list? Fences, buildings, bushes, trees, tall grass, parked cars, buses, walls on corners, garbage bins, signs, fog, darkness, or snow.

Notice that some of these items are also stationary hazards, and a few have a potential to be moving hazards. Other of these

Find and circle the hazards to a bicyclist.



visual hazards are also weather conditions, which we can find anywhere.

Train Your Brain

OK, now think about the hazards that you have to deal with where you usually ride your bicycle. List these below, starting with the block where you live. Include the next few blocks toward school or your best friend's house. If you always ride on the sidewalk, list sidewalk hazards. If you always ride in the street, list hazards in the street.

Since you travel this route often, you will already have a good idea in your mind of any hazards. For moving hazards you will have to imagine where kids will be playing, or where a car may turn. Make this list now, breaking each item down as follows:

SURFACE HAZARDS

_____	_____
_____	_____
_____	_____

STATIONARY HAZARDS

_____	_____
_____	_____
_____	_____

MOVING HAZARDS

_____	_____
_____	_____
_____	_____

VISUAL HAZARDS

_____	_____
_____	_____
_____	_____

Your list may only have a few items in each area. Now go out and look for hazards, so you can tell your brain how important they are.

First, draw a map on the next page of the 3 or 4 block area you want to study. You can have a grown-up help you if you prefer. Draw the streets, sidewalks, and intersections.

Then take a walk with a grown-up and look for hazards. Are they where you thought they would be? Add any new hazards you find. Also add such things as driveways. Look carefully, and take at least one hour to make your search. Enter all the hazards you found on your map.

How Did You Do?

Your map will probably include many more hazards than the list you provided before you started. As you walked, did people turn into the driveway in front of you? Would they have seen you if you were riding a bicycle at full speed? These should be on your list. Of course, all moving hazards such as dogs, cats, kids, and cement trucks will be present sometimes, and not others. So, your map should allow for these items to move. You cannot map these out, but must train your brain to look for them.

You may want to use a magic marker to mark areas where there is a lot of traffic as "high hazard" or "high risk" areas. Tell your brain to be especially awake when you approach these areas. What else can you do as you approach these areas that will help your brain?

When you bicycle slowly, your brain has time to see hazards and decide what to do.

Other Activities

Now that you have trained your brain to be alert to hazards in your immediate neighborhood, try these added activities:

1. In a shopping center, look for all four types of hazards.
2. Map the hazards on your entire route to school, or a nearby park.
3. As you drive in a car with your parents, notice visibility hazards in the downtown area where there are a lot of buildings, alleys, and parked cars. How would you handle these places on a bicycle?
4. Next time you drive on a country road, notice the types of hazards. Compare this drive with one on an interstate highway or freeway. What differences did you notice?

MY NEIGHBORHOOD MAP

Chapter 6

Reaction Time



How quickly can you react? If you were to set your hand down on a hot skillet, several things would happen. Instantly your hand would tell your brain to take action. Your brain would send an immediate answer. "Pull hand away! Ouch!" Perhaps you already know that this response or reaction takes time. That is why you get burned.

Find a group or friend and play this game. Have the other person place his hands out in front of him, palms up. Now place your hands about an inch above his, palms down. Do not look at his eyes, only his hands. Ask the person to bring his hands up quickly and slap the tops of your hands before you can pull them away. Try to pull your hands away as quickly as you can. Who wins?

Do this several times, then trade off.

When the other person is good, you will not be able to react quickly enough to get your hands away. We call this delay in time from when you first see movement in their hands until you can start moving your own hands the *reaction time*.

When you are wide awake, your reaction time may be as short as a quarter second. When you are sleepy or exhausted, it could be much longer.

How is this important in bike riding? How many times have you said to yourself that you could turn away from an accident, or stop before hitting something? Or that the motorist can always stop instead of hitting me? To understand better why this is not true, let's play several more games.

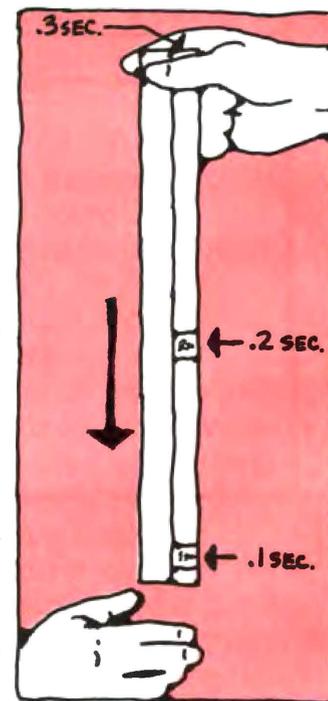
First, how long is a second? Have a friend or parent use a watch or clock that measures

seconds. Close your eyes when she says to begin. When you think ten seconds have gone by raise your hand. Have your friend tell you how many seconds you were off. Repeat this several times until you get better. Trade off with your friend to see who does better.

Now, do the same activity, and use this trick. When you begin, count seconds by saying to yourself, "One Mississippi, two Mississippi, three Mississippi . . ." When you get to ten Mississippi, you will have reached ten seconds.

So, the time it takes for one full second, is the time it takes to say "one Mississippi." That's not a long time, is it?

Now use a ruler, or the special bicycle reaction test ruler as shown here. Hold your thumb and index finger out as shown in the illustration here. Have a friend hold the ruler directly above your fingers. Look directly at the ruler. When your friend releases the ruler, try to grab it. How many inches or tenths of a second (on the special measurer) went by? Repeat this five times, and enter each score on the next page. If you know how to average your score, do this. A parent or friend can help.



1. _____
2. _____
3. _____ Average
4. _____ (add numbers, then
5. _____ divide by 5.)

Repeat this activity with a parent or friend. Who has the best average reaction time?

Was your reaction time less than half a second? Or did it take longer? We call this reaction time the *simple reaction time*. When you know that you must react quickly, know exactly what to do, and are poised to do it, you can react very quickly. In real life this might be where you already have your hands or feet on the brakes because you are watching a dog about to run in front of you. In this case you can respond quickly. If you know what can go wrong, you can use your fast simple reaction time.

Most of the time when you ride, however, you are not quick enough to see a need to brake. All of a sudden the car door opens. You must now decide to brake, get into a braking position, and tell your hands or feet to move. This takes a much longer time. This longer reaction time is called *complex reaction time*, which can be double or triple the time of the simple reaction time. It may take a full second longer.

Speed/Distance

So why is an extra second so important? It's time for another guessing game. Assume your classroom is 40 feet wide, an average width. How many classrooms would a

motorist travel from the time you suddenly swerve in front until he can get to his brakes? If the average motorist takes one second to make this decision, and the car is going 30 miles per hour, how many classrooms do you think the car would travel? Enter your guess below:

- One fourth of a classroom.
- One half of a classroom.
- Three fourths of a classroom.
- 1 full classroom.

The answer: A car will travel 44 feet at 30 miles per hour during this 1 second. So the car will go the entire length of your classroom even before the motorist can apply his brakes. It will take a car an added 55 feet to stop fully once the brakes are applied. So at 30 miles per hour the best motorist will take nearly 100 feet, or 2½ classrooms to stop!

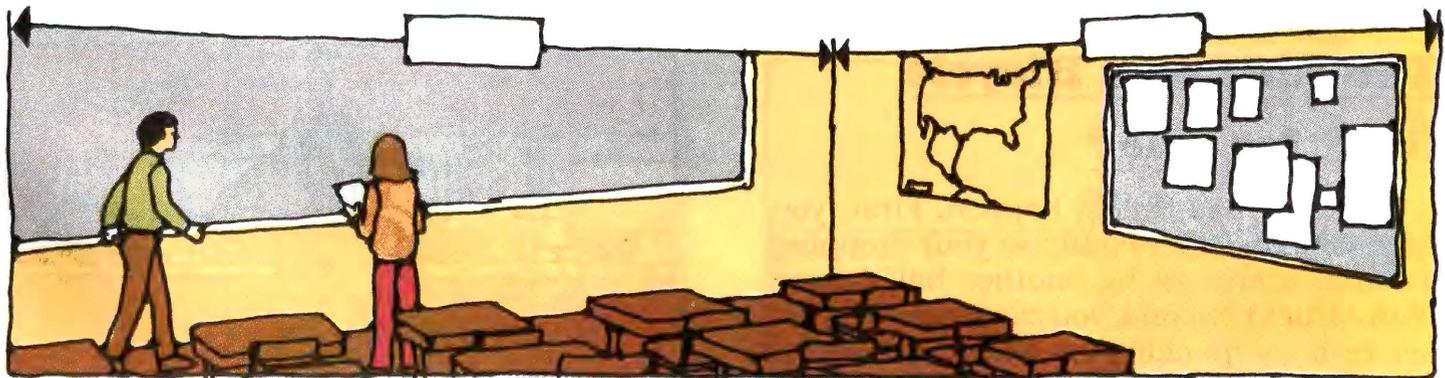
If a car is going faster, say 55 miles per hour, how many classroom lengths do you think will go by before the motorist can apply the brakes?

- One half of a classroom.
- 1 classroom.
- 2 classrooms.
- 4 classrooms.

The answer: Two classrooms (80 feet) before the motorist can even apply the brakes.

The total distance at 55 miles per hour for reaction time and braking time comes to 291 feet, the length of a football field!

So if you did something really dumb, like turn left when a car is passing you or coming toward you, even Supermom or Superdad would hit you.



Pace off the distance in your schoolroom and write in the answers in the boxes here.

Which Vehicle

Stops Fastest?

If you could put on your brakes at exactly the same instant as a car or a truck or bus, which of you would stop in the least distance? Guess below:

- Bicycle.
- Car.
- Truck.
- Bus.

If you guessed a bicycle, you are half right. A bicycle with caliper or handbrakes will take 29 feet to stop at 15 miles per hour. On the other hand, a car will take 30.5 feet. What about coaster brakes? With these, it will take 41 feet, longer than a classroom, to stop.

That is why, as you get older and your hands get stronger, you can actually stop better if you have caliper brakes. But both brakes need to be working, and you need to apply them at the same time. You also need more skill to use caliper brakes properly.

What About Trucks and Buses?

Both take far greater distances to stop. Because they are so heavy, they take 46 feet to stop at 15 miles per hour. This is even worse than a coaster brake bike. A train is worse yet. It takes a train 1,320 feet to stop from a speed of 15 miles per hour. That is more than the length of four football fields end on end.

What Happens When Two Ride on a Bicycle

Built for One?

Two really bad things happen. First, you have doubled the weight, so your stopping distance increases by another half (worse than a truck). Second, you cannot see as well, nor react as quickly. As a result, your total braking distance could be more than 100

feet. Compare this with just 29 feet if you ride properly.

What Increases

Reaction Time?

Check below the items you think will significantly increase the time it takes a person to react?

- Riding double on a bicycle.
- Talking with a friend while you ride.
- Aging (50 years old and over).
- Kids fighting in the back seat of a car.
- Eating an ice cream cone while riding.
- Listening to a radio while riding.
- Being cold, hot, or tired.
- Alcohol or drugs.

If you checked all eight of the above items, you get a perfect score. Your brain gets overloaded any time you are paying attention to other things or you are tired or you have chemicals running around in your body. Under these conditions, you can't make important decisions quickly.

You can test this out by repeating the ruler exercise. This time, have two or three people make noise, tickle you and scare you while you are trying to catch the ruler. Do this five times, and enter your score:

1. _____
 2. _____
 3. _____
 4. _____
 5. _____
- Average
(add numbers, then
divide by 5.)

Which vehicle stops fastest?



The 12 Second Rule

Want to be as good as the best race car driver at avoiding accidents? Expert drivers and bicyclists have learned a special skill to avoid accidents. If you get to be good at this, you will not even have any near accidents. We call this skill the 12 Second Rule. Remember the outdoor skill you learned to search over your shoulder? This is where the skill comes into play.

Here is how it works. Always search forward, to the right, to the left, and behind, for a full 12 seconds of distance. Most things go wrong in the area to the front, and the front-right. So this is where you should look most of the time. Every four or five seconds you should glance toward the left, and every several minutes you should search behind you. If you had a mirror, this would be easy. Remember, though, that a mirror can't show you everything that's behind you. That is why it is important to practice searching over your shoulder in a parking lot until you can do it well. Then you can do it in traffic without losing your balance.

How far do you need to look? At a speed of 10 miles per hour you will need to look 176 feet to cover where you will be in 12 seconds. This is over half a football field. At 20 miles per hour how far must you look?

When looking in any direction, you must make immediate decisions about things closer than this. You must also make less immediate decisions about things slightly

Tiredness, alcohol, and noise limit reaction time.



farther away. While looking, you are identifying things that can go wrong. By searching for movement only, you are able to identify the worst threats. A loose dog heading your way is very important, even though he may be 200 feet away.

Why 12 seconds? This is the time experts have found that you can see clues (visual cues) that tell you something may go wrong. As you approach an intersection, you need to know what anyone might do. Some drivers may not see you. They may turn in front of you. If this happens, and you have planned for it, you can take quick action. You could slow down, turn, or even stop, if necessary.

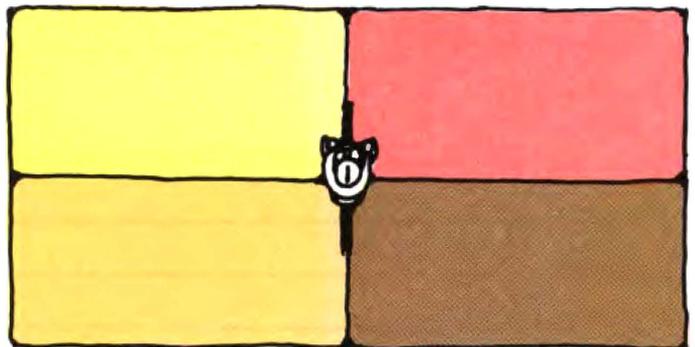
The trick is to keep your eyes and head moving always.

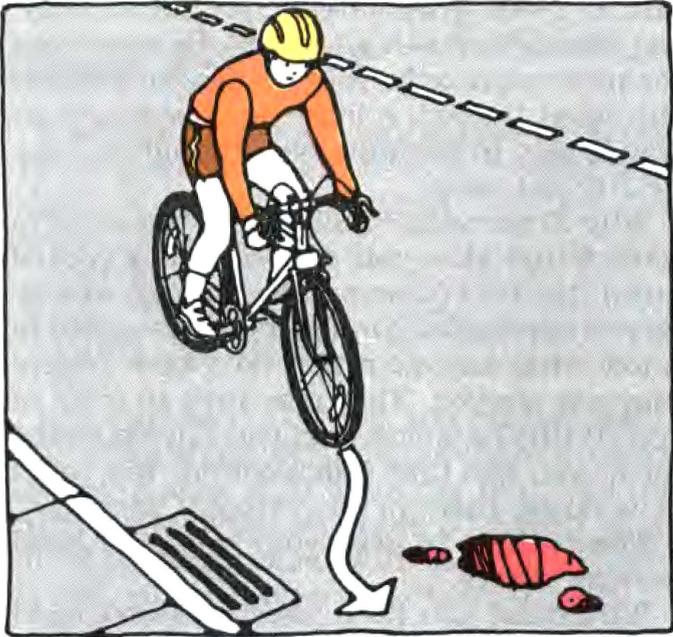
Why must you keep your eyes and head moving? Remember earlier when we talked about seeing? Your eyes can only pick out detail in the center 5 percent of your vision. The other parts of your eye are good at picking out moving things, but everything will be fuzzy. If you train your brain to respond, it will react. So by looking for things that could go wrong in the whole area you will travel in 12 seconds, you are telling your brain to stay awake.

Once you decide to talk with a friend, or just look straight ahead, your brain goes to sleep. It will only react when you feel immediate pain. And that's too late.

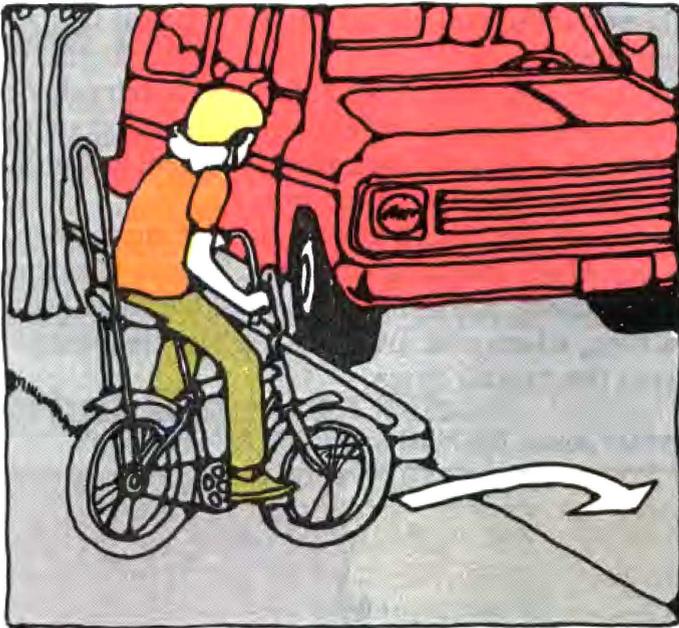
Study the illustrations on the next page. List what might go wrong. These illustrations cover the items that most frequently go wrong when you are riding a bicycle. Memorize the visual clues.

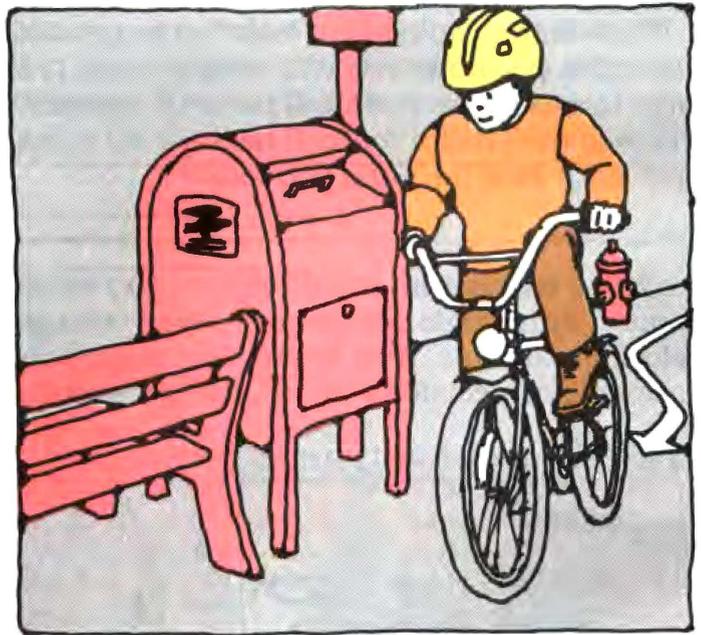
Which areas are most important for scanning?





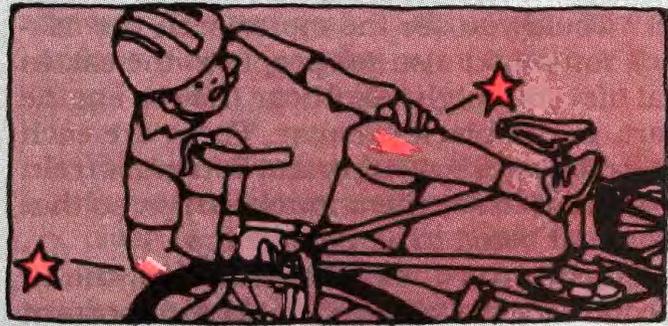






Chapter 7

Bicycling Emergencies



Skilled riders seldom have an emergency. By searching ahead, to the side, and rear, they always anticipate things going wrong in time to react. So they don't have better luck; they are better prepared.

Until you have many years of bicycling experience, emergencies will be common. That is why you want to keep training your brain all the time. Each time you get into a bad situation, tell your brain, "That was too close, remember that clue." This way, you will be more alert and better prepared the next time.

Another way to train your brain is to tell it what to do ahead of time. That way, when the emergency happens, your brain will already know what to do.

Here's an example. Pretend you are on a street near a school where a lot of cars are parked along the curb. You are riding about five feet out to avoid an opening car door. That's smart. But, you are not searching for clues, and a parked car 40 feet (one classroom) ahead suddenly pulls out from the curb. What do you do? Answer below:

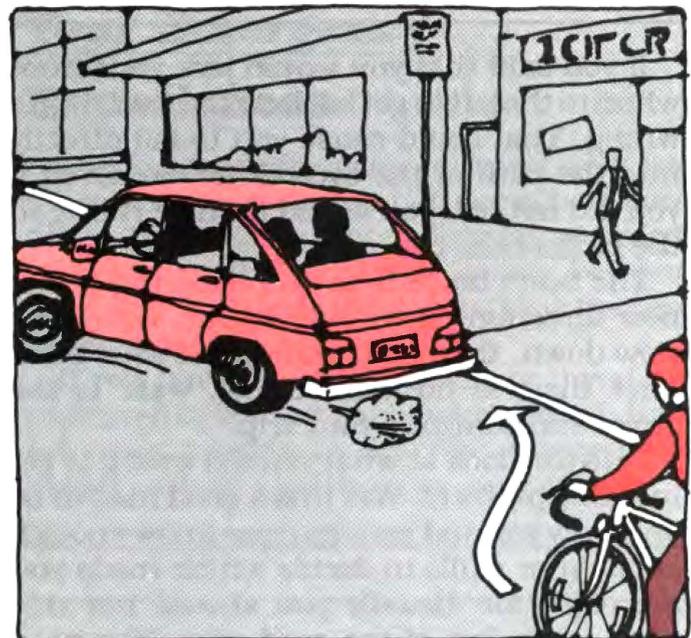
If you answered "turn left" you are correct that you will avoid a collision with this car. But you will now be swerving into the path of a car passing you from behind. Also, as you turn your wheel suddenly to the left, your body will go to the right, and you will fall.

The best answer to tell your brain is to "apply brakes." Then, as you are slowing, if

you will still hit the car, gradually turn toward the open space the car is leaving behind at the curb. See the illustration here.

You will want to pull away from traffic, so in most cases you will want to go to the right, or toward the curb. This way, you will avoid the more serious threat, a car behind you.

By the way, what were the clues that would have alerted you that a motorist might pull away from the curb? Look at the illustration here and list as many clues as you can:



This is the path to take.

Did you notice that the wheels were turned left? Could you see the motorist in the mirror? You might also see people in the car. In real life, you might also hear the car engine start, or see black exhaust. These are each little messages to your brain. You must train your brain to see them much earlier, so that you avoid being in an emergency.

Remember in the earlier lesson on the 12 Second Rule we talked about how important it is to keep your eyes moving? Once you perfect this system, you will be looking for and noticing these clues. You will be becoming the best bicyclist in the world.

Other Common

Emergencies

Let's give your brain a real test. We will describe some situations that could be emergencies. After each one, write what you would do. Remember, you want to avoid any injury, so be cautious.

1. While riding in the street, you hear a car coming up from behind. You decide to move over, but you move too far to the right and your front wheel goes off the road. What do you do?

If you said that you would jerk your front wheel to the left to get back on the road, that's wrong. That could cause you to fall directly into the path of the overtaking car. Even if you did not fall, you would then be riding in the path of the car.

The best choice is to keep steering in the new direction, then ride it out. Gradually slow down, then stop and get off your bike. After there is no more traffic, walk to the street and continue your trip.

Let's also look at what you did wrong to get into this problem. Was this a good road to be on? Only you and your parents know enough about your skills to decide which roads you are ready for. Usually you should not ride within two feet of the road edge. You need

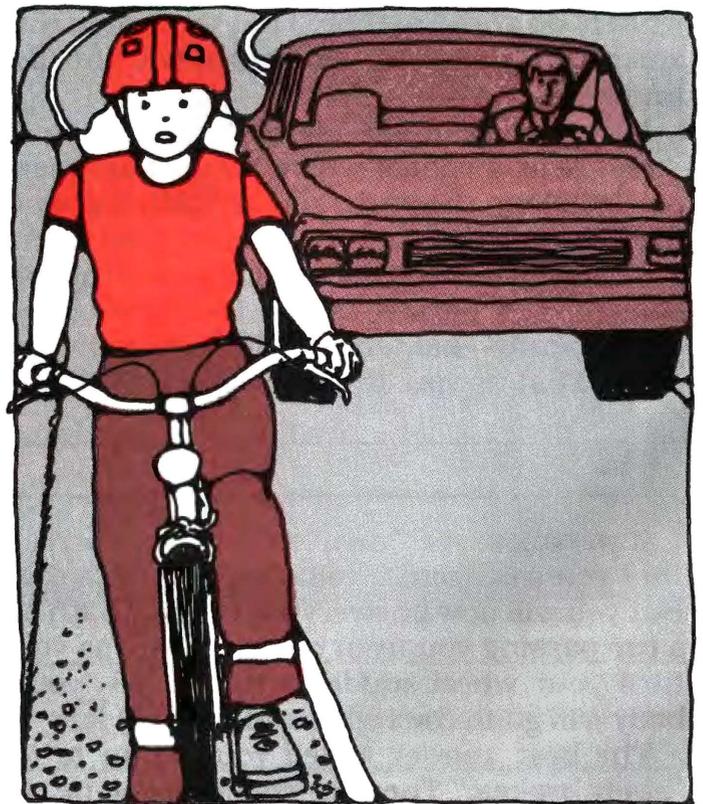
plenty of space to operate a bicycle safely. Also, if you get too close to the edge, you might lose control.

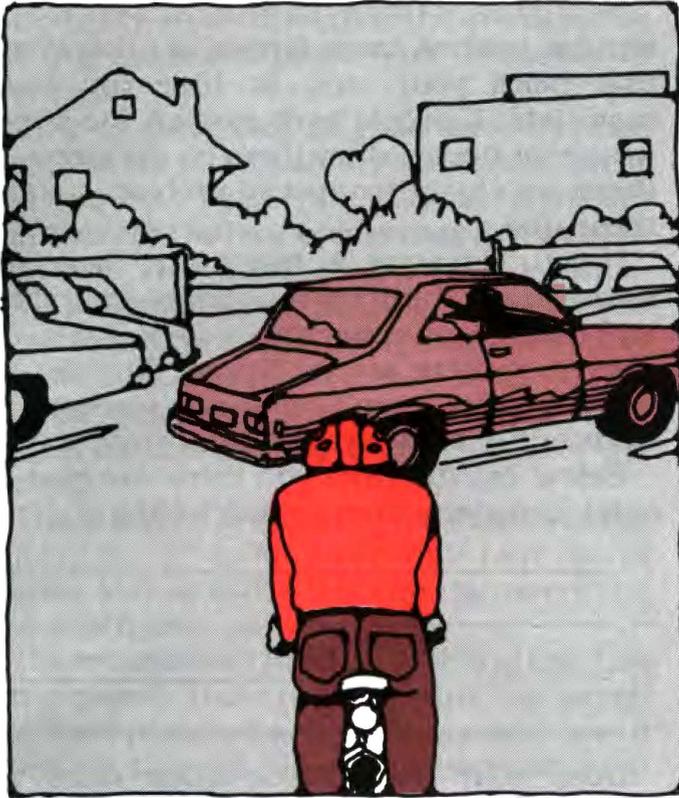
2. In a parking lot, a car suddenly pulls into or out of a diagonal parking space into your path. You are only 20 feet away. What do you do?

If you answered turn to the right and begin braking, you are correct. This is a lot like the earlier emergency with the car in the street.

This accident is even easier to avoid. Draw a line in the parking lot picture here, showing where you think you should ride.

Unlike on a street, you are allowed to ride in the center of a parking lot. This way you can see people pulling out, and people in the cars have a better chance to see you. When you are alongside parked cars, you are hiding





yourself from everyone. So, stay where the drivers can see you. Parking lots are hazardous places, so plan your trip to a shopping center carefully.

3. You are traveling down the street. Traffic is moving slowly and you have ridden too close to the car traveling just in front of you. All of a sudden you see a large pothole in the road. What do you do?

If you answered that you would use a “rock dodge” flip of your wheel, you are right. You probably learned this skill at the rodeo. This keeps you upright, so that you do not swerve. If you have just a little more time, you can simply steer to the right to go around it. Why shouldn't you ever go left, if there is any way to avoid it?

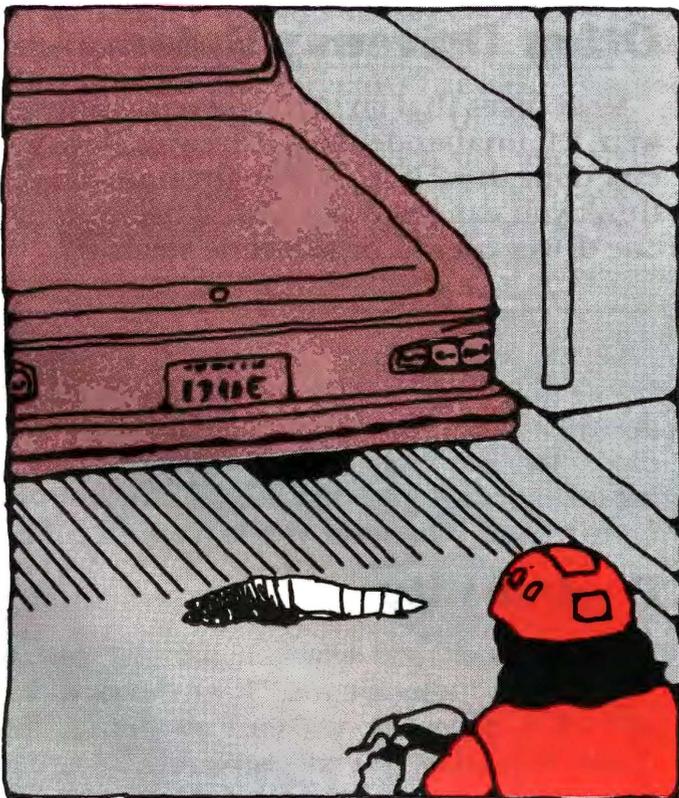
Of course, to avoid this being an emergency, never let yourself get within 50 feet of any car. This way your eye and brain have time to pick out any hazard before it becomes an emergency.

Your Emergency

Experiences

The best emergencies to learn from are those you have almost had, or actual accidents. Write in the space below the emergencies you remember. Leave space between each one. Then write what you think the best action would have been.

If you haven't ridden much, or if you are real careful you may not have any to list. If so, ask your friends to describe emergencies they have had. Use those as examples.

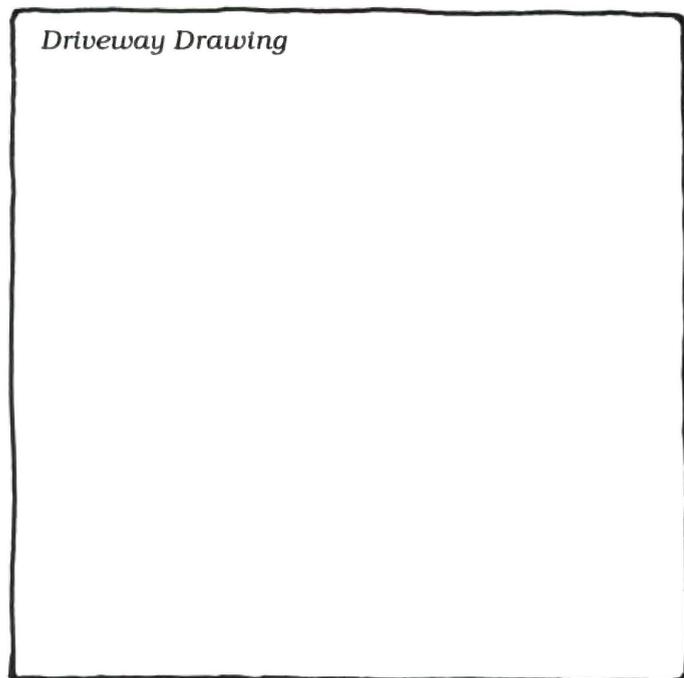


Driveways

If you are like most kids, you spend a lot of time in front of your house. You often begin bike rides coming out of your driveway into the street. This is where many young bicyclists get hurt. List several reasons why you think this is true.

Many students say “they were not being careful.” Although this is probably true, it takes a lot more than being careful to avoid being injured. Let’s look at what we can do to improve things in your driveway. (If you do not have a driveway, pretend in the drawing that you are at a friend’s house, or the driveway at school or some other favorite place).

First, draw the driveway, and where it enters the street. If there is a sidewalk, put that in, too.



Now go back to the drawing, and enter any shrubs, bushes, trees, fences, or other items that block your view, or hide you from motorists. If people park cars on the street near your house, draw them on the street. If there are any other special problems, enter those, too.

If your driveway is like most, there are some dangers built in. You cannot see traffic, and traffic cannot see you.

Even if there are no fences, bushes, or cars, motorists aren’t looking for someone to come out of a driveway without stopping.

Below, list the rules you think are best to enter a roadway from your driveway.

1. _____
2. _____
3. _____
4. _____

Does your list include such rules as “always walk your bike to the road, raise your pedal to give you a good start, look both ways for traffic, begin when no cars are in the block?”

Other Driveway Rules

Most bikes that go to the bicycle graveyard were left unattended in a driveway. Have you ever done this? If so, how many times do you think you can get away with it before someone drives over it, or someone steals it?

If you said about ten times, that’s about right. You need a special place where you always park your bike. You can have one place for daytime and another place for nighttime. But you definitely need to find a secure place whenever you leave your bike.

Probability

If this is a new word, a simpler one is “luck.” How lucky are you? If you have ridden out of a driveway without stopping 952 times, someday you will probably have bad luck. Probably someday there will be a car

coming when you ride out of the driveway. We call this the law of probability, or the law of averages.

Just as there can be good luck and bad luck, the law of probability can have good or bad results. Most professional gamblers don't play the lottery, unless they just want to have fun. They know that the law of probability is against them. But amateur gamblers think that if they place many small bets, they may win big. The chances may be 1,000,000 to 1, but people still play, thinking that it will be fun in the unlikely event that they get picked.

These people are looking for what is called the *big payoff*. As long as people have lots of money, and consider this entertainment, no one gets hurt.

There is another kind of gambling that has a big payoff. Unfortunately, this big payoff can hurt people. Each time you ride into a street or through an intersection without first checking for traffic, you have gambled. And since you are not putting money on the line, what is your gain? Time. By not stopping, you saved a few seconds. You win. So you do it again, and again. All people do this. Sometimes adults do it in cars.

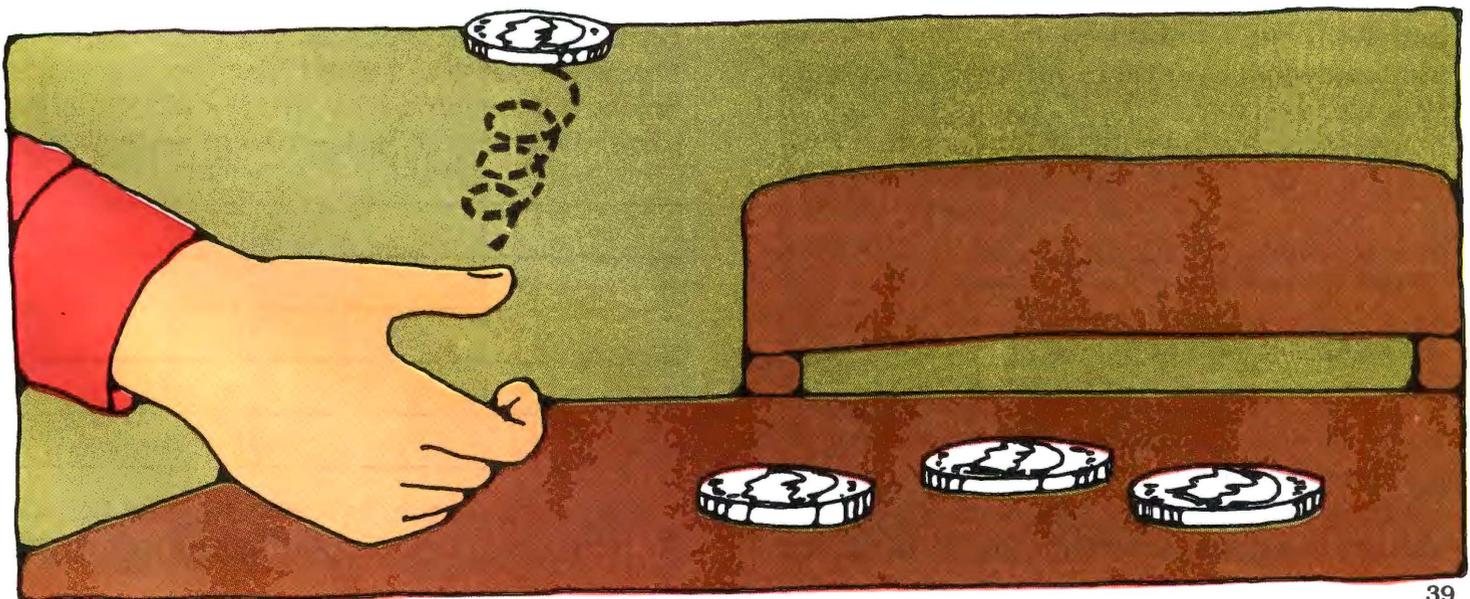
But one day the big payoff comes. That's when you read about people in the newspapers. People get all dressed up, and visit them at the funeral home. If they are lucky, they don't make it to the funeral home, just

the hospital. But they may never walk, ride a bicycle, or drive a car ever again. They get hurt really badly. That is why you want to avoid doing things, like not stopping at the end of your driveway, that could have a big payoff.

To learn more about the big payoff, or probability, let's play a safe game. Ask everyone in the room to get a coin. Now keep track in the space below. Have everyone flip the coin. When someone finally gets four heads in a row, that will be the big payoff. Keep track of how many times it takes. Does it take 800 times before it actually happens? Or 8,000? It will take a long time for it to happen, but sooner or later it will happen.

When you are taking chances in traffic, it is easy to believe that nothing bad will ever happen. However, you are only fooling yourself if you continue to take chances. Sooner or later, every gambler has a big payoff, and unlike the person who gambles for money, you don't want one! That's the most important thing for you to know about probability.

If you follow good rules or habits, you will never be gambling, and there will never be a big payoff.



Chapter 8

Riding Safely



If you are not a very experienced bicyclist, or you live in a busy neighborhood, you may do most or all of your riding on sidewalks. Later, you may ride in the street more often. Here are some tips for both sidewalk riding and riding in the street.

Sidewalks

Sidewalks often have many fences, bushes, trees, fire hydrants, and parked cars hiding you from traffic. This makes them hazardous. But they still may be the best place if there is heavy traffic in the street.

When using sidewalks, always use the 12 Second Rule. Assume that motorists will not see you when you cross an intersection or driveway. Always look out for what the motorist will do.

Let pedestrians know that you are coming. If you pass a pedestrian from behind, always say, "On your left," then pass slowly, on their left. With young children or babies, always stop and walk your bike. You may want to do this with very old people, too. This kind of courtesy pays off. People might say to themselves, "Oh what a wonderful child _____ (enter your name) is. I would like to reward _____ by treating him or her to the circus," or whatever.

Roadways

Either now or later, you may spend most of your time on a bicycle in the street. People can see you better in the street, but there are other risks. The most important rule to follow is so important we will print it in capital

letters: **ALWAYS BE PREDICTABLE.**

Write in the space below, what you think this rule means:

Being predictable is following all of the other rules. Always ride to the right, never swerve left, stop at all stop signs, signal your turns—that kind of thing.

What Part of the Road

Do I Ride On?

Most bicycle laws say, "Ride as far to the right as is practicable." That word "practicable" is hard to pronounce. Why don't they say "practical" instead? Some people do. But, the two words don't mean the same thing. What the law makers mean is this: ride to the right side of the highway, but not so close to the edge that you will get hurt. In the space below, list reasons why you should be more toward the center of the road in some cases:

Did your list include such things as these? Crumby road edge, dropoff, loose sand, water

puddles, broken glass, dangerous drainage grates, doors opening on parked cars, potholes near the curb, spilled concrete, bricks, dead cats, and dead car mufflers? If so, you are catching on.

If you were to ride too close to the side of the road, you would be constantly swerving back and forth. Motorists turn white when they see bicyclists acting this way. Some even start to dislike kids and bicyclists.

A better way to ride is to always be about two feet from the curb, and scan about 12 seconds ahead for any parked cars, debris, or other problems. Remember the 12 Second Rule. If you see any problems, then look behind you and search for traffic, signal, and move to the left when it is safe.

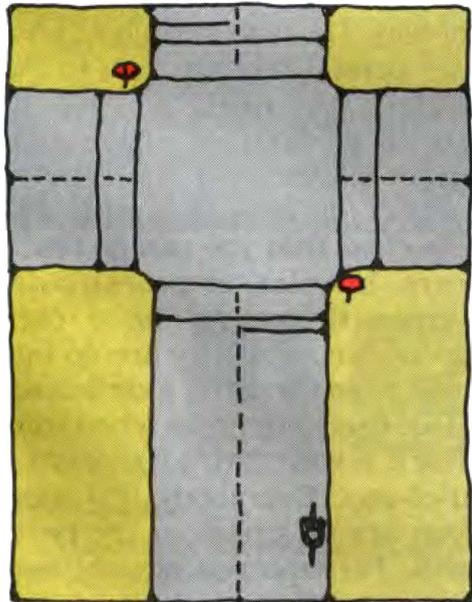
This both allows you to be predictable, and means you are riding a *practicable* distance from the curb.

Neighborhood

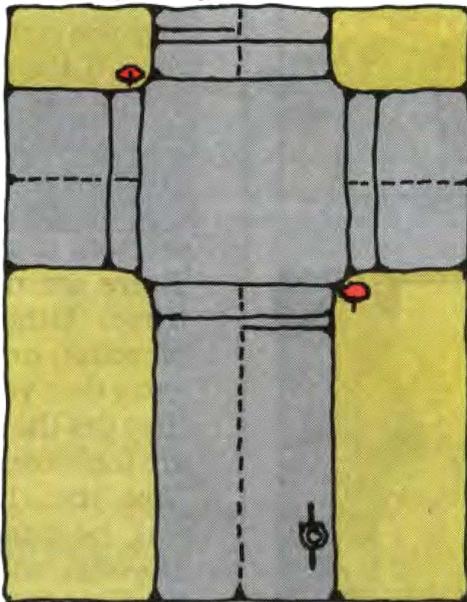
Intersections

Using the illustrations here, draw your path on the approach to an intersection if you are going to turn right. Now draw your path if you were to go straight (after stopping, of course). Now draw your path if you are going to turn left.

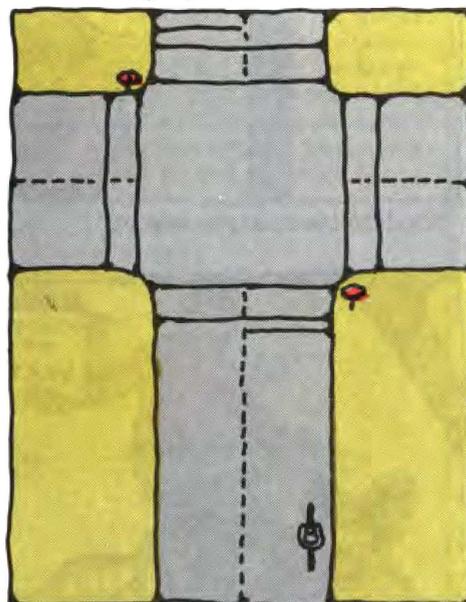
For turning right.



For going straight.



For turning left.



Draw your path through the intersections.

Did your turn to the right keep you near the right hand edge, but not at the edge? If you get too close to the curb, you will be hidden from the drivers, so stay two to three feet out.

If you are going to go straight, you should ride about two or three feet further out. And if you are going left, you should be near the center of the lane, and signal. By doing these things you are communicating your intentions to the motorists. This makes you predictable.

If you are unsure about these things, and most people are, have a grown-up demonstrate these techniques at an intersection.

Wicked Intersections

Sometimes roads have so much traffic that engineers build special lanes to turn right, and special lanes to turn left. As young bicyclists you may want to label these *wicked intersections*. Until you have more experience with these crossings, it is best to get off of your bike and walk in the crosswalks like a pedestrian.

Intersection Rules

A couple of special rules on intersections will help you avoid accidents. Always search

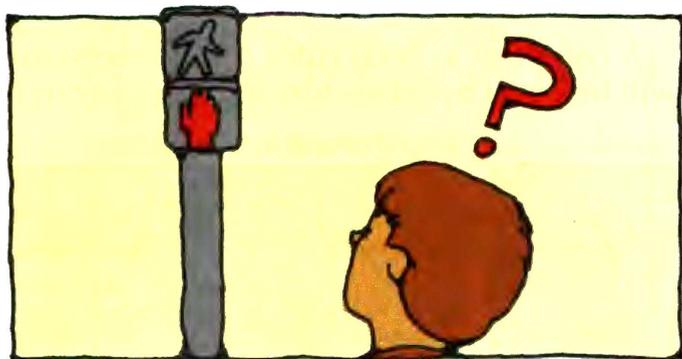
12 seconds ahead. During the last six seconds on your approach, have your hands or feet ready to brake. Slow to a safe speed, and proceed when you know it is OK. If there is a stop sign, always stop. Search left, right, then left again. Then proceed when it is safe.

When there is a traffic signal, always stop for red lights.

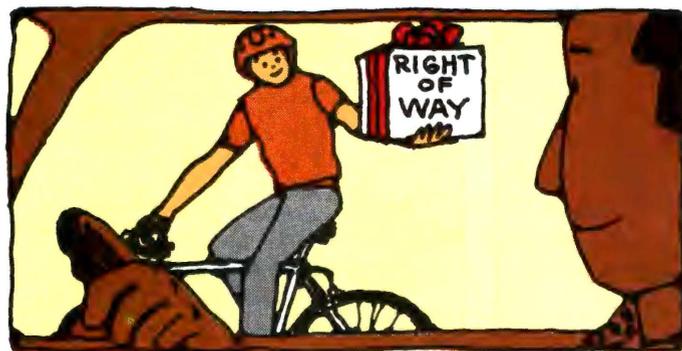
Good bicyclists also stop when the light turns yellow, too. Although this is not the law, it is a good practice. Since bicycles travel slower than cars, you cannot always get across on a yellow light before the light changes to red. Motorists coming the other way may not see you, and may go as soon as their light turns green.

Special Intersection Secret

OK, how do you tell if the light is about to turn yellow? We call a green light that is about to turn yellow a "stale green." That's like drinking milk that has turned sour, or bread left out overnight. Ycchhh! As you approach the intersection, scan up and look at the pedestrian WALK/DON'T WALK sign. Does it still say walk? If so, the green is still



What do these signs mean?



fresh. If it is already flashing "don't walk" the green is going stale. If it is a solid "don't walk," the light is ready to turn.

Right-of-Way

The idea of right-of-way confuses more people than anything else about traffic. "Who had the right-of-way?" you will hear people ask. Often they ask this after there has been an accident. Traffic rules always require somebody to stop when two vehicles are heading toward one another at an intersection. But some roads do not have stop signs. And the rule is that you give the person who gets there first the right-of-way. You slow down, and they continue.

Notice that we said you *give* the person the right-of-way. This is important. Right-of-way just means permission to go first. Permission is something that someone gives you, like a gift. You can't ever take permission, and you can't ever take the right-of-way, either. A vehicle operator can give it, but can never ask for it or take it. That is why it's dumb to ask, "Who had the right-of-way?" It's better to ask, "Who forgot to give the right-of-way?" Remember that on a bicycle, you are a vehicle operator, so you have to follow the same rules as everyone else.

If two people get to the intersection at the same time, the person in the vehicle on the right side always expects the other person to give the right-of-way. The law even says to do this. If the other person motions you to go on, he has just given you the right of way. If you motion him to go first, you have just given him the right of way.

Many times when you approach an intersection, it will be clear that you can go first. There are no cars, bicycles, or pedestrians there. Other times there may be a car, bicyclist, or pedestrian, but they are so far away that you will be to the other side before they get there. But there are times when you are too close. Now it is your time to be smart. Give the right-of-way. Everybody will like you, because you are as smart as the best bicyclist on earth. Perhaps you already *are* the best bicyclist on earth.

Signs and Signals

At intersections and all along the streets you will notice a variety of traffic signs. Traffic planners make it easy to follow signs by repeating a message three times: by color, by shape and by words or the symbol used. Here are some important colors, shapes and messages for bicyclists:



Stop/Yield

Stop signs are always red. Stop signs are always eight-sided or octagons, while yield signs are triangles and are also red. Stop signs should be located with pavement markings called a "stop line." Find the stop lines at your intersections in your neighborhood. That is the line you must stop at first.

Regulation
These signs are always square or rectangular, always black on white or with red overprint.

Warning
Warning signs are yellow except construction zone warning signs which are always orange. Warning signs are usually a diamond shape. Use extra care when you see warning signs. What other types of warning signs are in your neighborhood? Draw one of them below that is not illustrated here.

Railroad

These signs are always a circle, always yellow and always the same symbol. There is another sign at railroad crossings that looks like an "X". Have you seen it before? If you have, draw it here.



It is important to be very careful crossing at all railroad crossings with your bicycle. After determining it is safe, you must point your wheel at a right angle crossing one track at a time.



Information

These signs tell you which way to go for special services or routes.

Turning Left

Turning Right

OR

Hand Signals
Signals must be given whenever making turns, changing lanes or stopping. The correct hand signals are shown here. When stopping, place one foot on the ground.

Tips and Review



In this workbook, you have learned ideas to make you the best bicyclist on earth. But just reading and writing these ideas don't make you a great bike rider. You need lots of practice. Luckily, that's the fun part. Here are some final tips, and a review to try. Come back to this review every week or so for a few months until you get everything right.

Tip #1

Ask mom or dad for a quarter and some tape. Now tape the coin to a hidden part of your bike like under the seat, or on the chain stay. Refer back to the chapter on bike parts if you don't remember what a chain stay is. Black electrician's tape is a good choice, if you have it. Why do you think it would be a good idea to tape the quarter to your bike? List a few reasons below:

Tape a quarter to your chain stay.



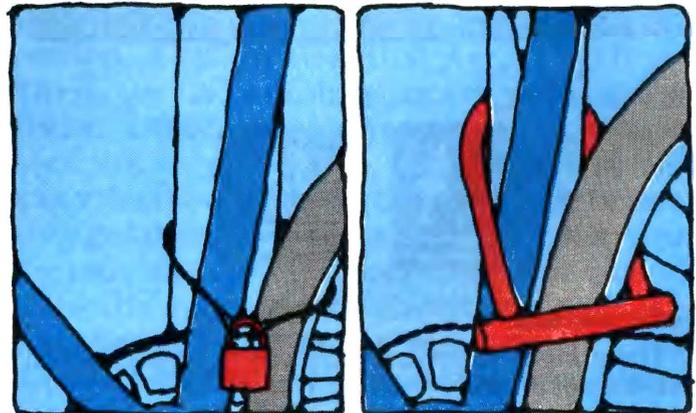
The most important reason is that if something happens so that you can't ride your bike home safely, you can call someone and have them pick you up. Sometime your bike might break down, or a sudden storm might come up, or you might be at the library later than you planned.

Tip #2

Always lock your bike. Each day in your city dozens or hundreds of bicycles are stolen. Most of these were not locked. Only a few are ever found by the police. Yours is unlikely to be one of them. If it is, do you know your serial number? Enter it here

The first picture here shows you which locks thieves like, since they are easy to break. Get one of the locks thieves don't like (see the second picture).

Always lock your bike.



Tip #3

Get a good helmet. Wear it. Now that you have taken so much time to train your brain, why not keep it? We can replace a few things in our bodies like teeth, skin, and an arm (artificial arm). Of course these replacement parts never work quite as well as the original part, which is too bad. Even worse, there are some things we cannot replace, ever. The most critical is a brain. Tell your folks to read this tip, right now. Tell them your head is worth \$20, and maybe even \$50. Tell them you promise you will wear your helmet. Then do it. This is the most important tip in this book.

Tip #4

Go back and read tip #3.

Tip #5

When you ride a bicycle, leave your radio home. Some grown-ups wear headsets when they jog, walk, or ride a bicycle. If they want to get hurt, that's their business. Since you are becoming the best bicyclist on earth, you need your ears. You want to know what is coming up behind you at all times. You want to hear any dogs about to run you down. You want to hear everything there is to hear. Always keep your ears alert. Tell them to send messages to your brain, just like you've told your eyes to send messages.

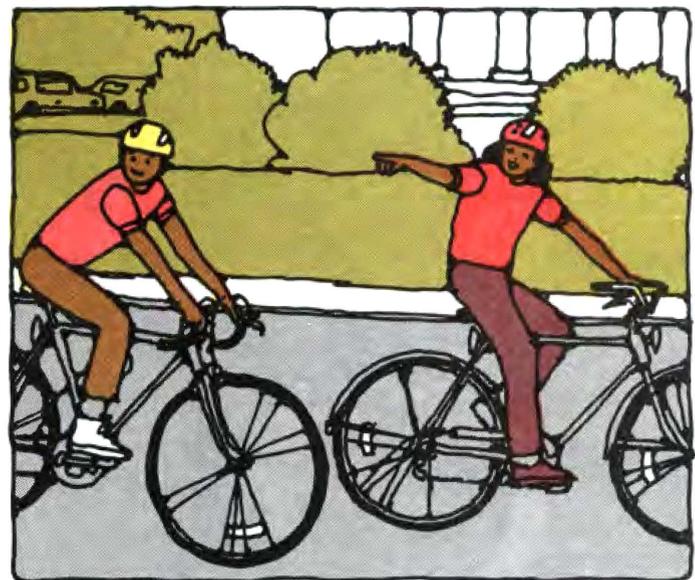
Tip #6

When you ride with one or more friends, always make your own decisions. Your brain is likely to do a really dumb thing when you are with friends. It is likely to forget all of the rules you have learned. Follow this tip. Whenever you ride with a friend, both of you ride as though you were alone until you get where you are going. Each of you should look for traffic at each intersection, look for cars coming out of driveways, and look for roadway debris. Use the 12 Second Rule. Teach your friend to do the same. This way you will get to your destination safely. Once you get where

Wear a good helmet.

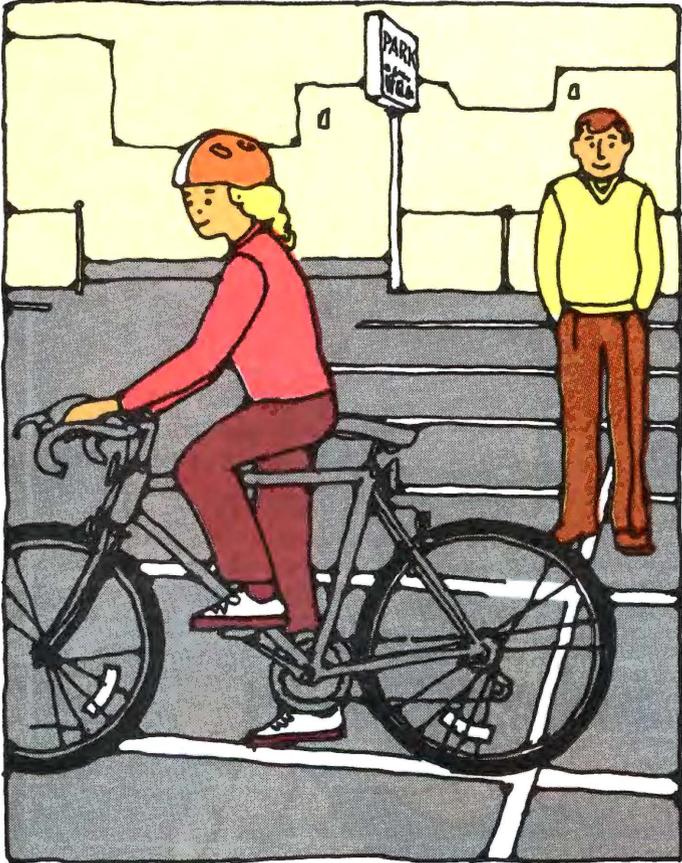


Don't wear headphones.



Ride single file.

Practice starting off.



you're going, you can concentrate on having fun.

Tip #7

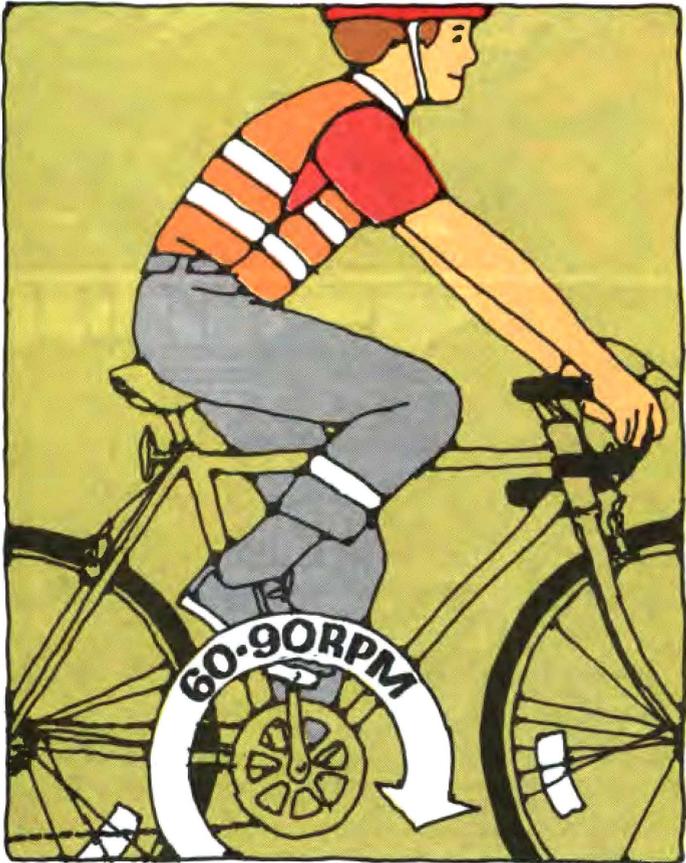
The time when you are most likely to fall over on a bicycle is when you are just starting out. That is because you are traveling at such a slow speed. Since this is the most embarrassing thing that could happen to you, we have saved this tip for last. Go to an abandoned parking lot and practice this skill. Position your pedal as shown in the illustration. This is about where 10:00 would be on a clock. Now, push off with your full thrust. If you do this right, you can ride on a perfectly straight line without ever getting off. Find a painted line in the abandoned parking lot and try this until you can do it easily.

Nobody will call you the best bicyclist on earth until you can ride down the road in a perfectly straight line. Practicing your starting off and stopping skills will help.

Tip #8

One other skill that we will recommend is to pedal very fast, about 60-90 times every minute. This is called "riding in a high cadence." That sounds complicated, but it's simple. As you start riding a multi-speed bicycle, you can select a gear that allows you to pedal this fast all the time. Even when you want to go slowly, gears allow you to keep this high cadence. Why is that important? Until you get up to a high cadence you will be thrusting from one side to the other. As you do this downthrust on the right leg, then on the left, your entire body sways. As your body sways, your bike moves right, then left. You take up a lot of road doing this. And you look like a beginner to everyone who sees you.

So, after you get good at all of these other things, you will want to practice riding at a good cadence. We suggest 60-90 revolutions per minute. Then you can ride a perfectly straight line, always.



Special Bicycle Words

How many of these words do you know? Check off those you already know. The ones that you are not sure of are the ones most important to you. Look up the page number, go back and read that section. Until you do this, you are not the best bicyclist on earth.

All terrain, page 11
Axle, page 9
Bald spots, page 14
Ball bearings, page 9
Blip, page 15
Blowout, page 14
BMX, page 11
Bottom bracket, page 8
Bracket, page 8
Brakes, page 7
Bulges, page 14
Cable housing, page 16
Cadence, page 46
Caliper, page 10
Caliper brake, page 10
Camouflage, page 23
Chain stay, page 8
Coast, page 10
Coaster brake arm, page 10
Coaster brakes, page 9, 10
Collide, page 16
Commuting, page 11
Crankset, page 11
Crosswalk, page 41
Curb, page 41
Diamond frame, page 7
Down tube, page 8

Downthrust, page 46
Drainage grates, page 26
Drivetrain, page 11
Efficient, page 7
Emergency, page 35
Fork, page 7
Foveal, page 21
Frame, page 7, 8
Freestyle, page 11
Freeway, page 28
Gears, page 11
Glare, page 23
Gooseneck, page 10
Hand brakes, page 10
Handlebar, page 7
Hazard, page 26
Hazardous, page 37
Head tube, page 8
Headlight, page 24
Headset, page 16
Hexagon, page 43
Highway, page 28
Hubs, page 8
Intersection, page 21
Interstate, page 28
Levers, page 15
Lubricant, page 16
Lugs, page 8

mph, page 10
Motorists, page 6
Octagon, page 43
Open frame, page 7
Pedals, page 7, 11
Pedestrians, page 20
Penetrating oil, page 16
Perception, page 22
Pollute, page 5
Potholes, page 6
Practicable, page 40
Predictable, page 25
Probability, page 38
Race, page 9
Racing, page 11
Rake, page 9
Rear dropout, page 8
Recondition, page 13
Reflective, page 24
Reflector, page 24
Reflexes, page 6
Repack bearings, page 16
Right-of-way, page 42
Rim, page 8
Rim liner, page 9
Risk, page 28
Rock dodge, page 37
Rodeos, page 6

Saddle, page 10
Seat, page 7
Seat post, page 10
Seat stay, page 8
Seat tube, page 8
Selective, page 22
Spokes, page 8
Stationary, page 26
Stays, page 8
Stem, page 10
Straddle, page 13
Surface, page 26
Swerve, page 26
Tandem, page 11
Tire, page 8
Top tube, page 8
Touring, page 11
Track, page 11
True, page 9
Tubes, page 8
Valve stem, page 14
Vehicle, page 19
Visible, page 22
Visual, page 27
Wheels, page 70
Wobble, page 15

Resources

Safety and Education:

American Automobile Association (AAA). Check your telephone directory for the AAA chapter nearest you.

National Safety Council
1121 Spring Lake Drive
Itasca, IL 60143
(315) 453-7462

National Safe Kids Campaign
111 Michigan Ave. NW
Washington, DC 20010
(202) 939-4993

Outdoor Empire Publishing, Inc.
Bicycle Consultant
511 Eastlake Avenue E.
Seattle, WA 98109
(206) 624-3845

Trek Bicycle Corporation
Bicycle Safety Coordinator
801 W. Madison Street
Waterloo, WI 53549
(414) 478-2191

Touring and Maps:

Adventure Cycling
P.O. Box 8308
Missoula, MT 59807
(406) 721-1776

Rails-to-Trails
1400 16th Street NW
Washington, DC 20036

Organizations:

Bicycle Federation of America
Bicycle Institute of America
1818 R Street NW
Washington, DC 20009
(202) 332-6986

League of American Wheelmen
190 W. Ostend Street, #120
Baltimore, MD 21230
(301) 539-3399

Bicycle Rodeo Kits:

Outdoor Empire Publishing, Inc.
Bicycle Consultant
511 Eastlake Avenue E.
Seattle, WA 98109
(206) 624-3845

Government:

Environmental Protection Agency
Bicycle Coordinator
401 M Street SW
Washington, DC 20460

Federal Highway Administration
Bicycle-Pedestrian Program Manager
400 7th Street SW
Washington, DC 20590
(202) 366-5007

U.S. Department of Transportation
Bicycle-Pedestrian Program Manager
400 7th Street SW
Washington, DC 20590
(202) 366-4821

The Uniform Vehicle Code

The Uniform Vehicle Code (UVC) is a model set of motor vehicle and traffic laws designed and advanced as a national comprehensive guide or standard. Listed below are selected sections from the UVC, greatly simplified for your understanding. To obtain a complete listing of the bicycle related portions of the UVC, please write to Bicycle U.S.A. (see page 47). There is a small charge for non-members.

- Traffic laws apply to persons on bicycles and other human powered vehicles.
- No bicycle can be used to carry more people at one time than the number for which it is designed or equipped.
- No person riding on a bicycle, coaster, roller skates, sled or toy vehicle can attach the vehicle or himself to any other vehicle on a roadway.
- Anyone operating a bicycle on a roadway at less than the normal speed of traffic must ride as close as practicable to the right hand curb or edge of the roadway, except:
 - a. when overtaking and passing another bicycle or vehicle proceeding in the same direction.
 - b. when preparing for a left turn at an intersection or into a private road or driveway.
 - c. when reasonably necessary to avoid conditions, such as a sub-standard width lane, that make it unsafe to continue along the right hand curb or edge.
- People riding bicycles on a roadway must not ride more than two abreast except on paths or parts of roadways set aside for the exclusive use of bicycles.
- A person operating a bicycle must keep at least one hand on the handlebars at all times.
- Left turns:
 - a. A person riding a bicycle must use the turn in the extreme left hand lane lawfully available to traffic for that purpose.
 - b. Or, a person riding a bicycle must approach the turn as close as practicable to the right curb or edge of the roadway. After proceeding across the intersection to the far corner, the bicyclist must stop out of the way of traffic. The bicyclist must yield to any traffic and obey all traffic control devices before proceeding in the new direction.
- A right or left turn signal must be given not less than the last 100 feet traveled before turning, and must be given while the bicyclist is stopped waiting to turn.
- A person using a bicycle on a sidewalk or in a crosswalk must yield the right of way to any pedestrian, and must give an audible signal before overtaking and passing any pedestrians.
- Every vehicle on a highway from a half hour after sunset to a half hour before sunrise must emit a white light visible from a distance of at least 500 feet to the front. A red rear reflector must be visible for 600 feet to the rear.
- Every bicycle must be equipped with reflective material to be visible from both sides for 600 feet.
- A person must not drive a bicycle with earplugs in both ears or while wearing a headset covering both ears.
- Every bicycle must be equipped with a brake or brakes which will enable its driver to stop the bicycle within 25 feet from a speed of 10 miles per hour on dry, level, clean pavement.
- A bicycle must not be equipped with any siren or whistle. Bicyclists must not use sirens or whistles.
- If conditions warrant, a uniformed police officer may require the cyclist to stop and submit the bicycle to an inspection.
- When two vehicles approach or enter an intersection from different highways at approximately the same time, the driver of the vehicle on the left must yield the right of way to the vehicle on the right.