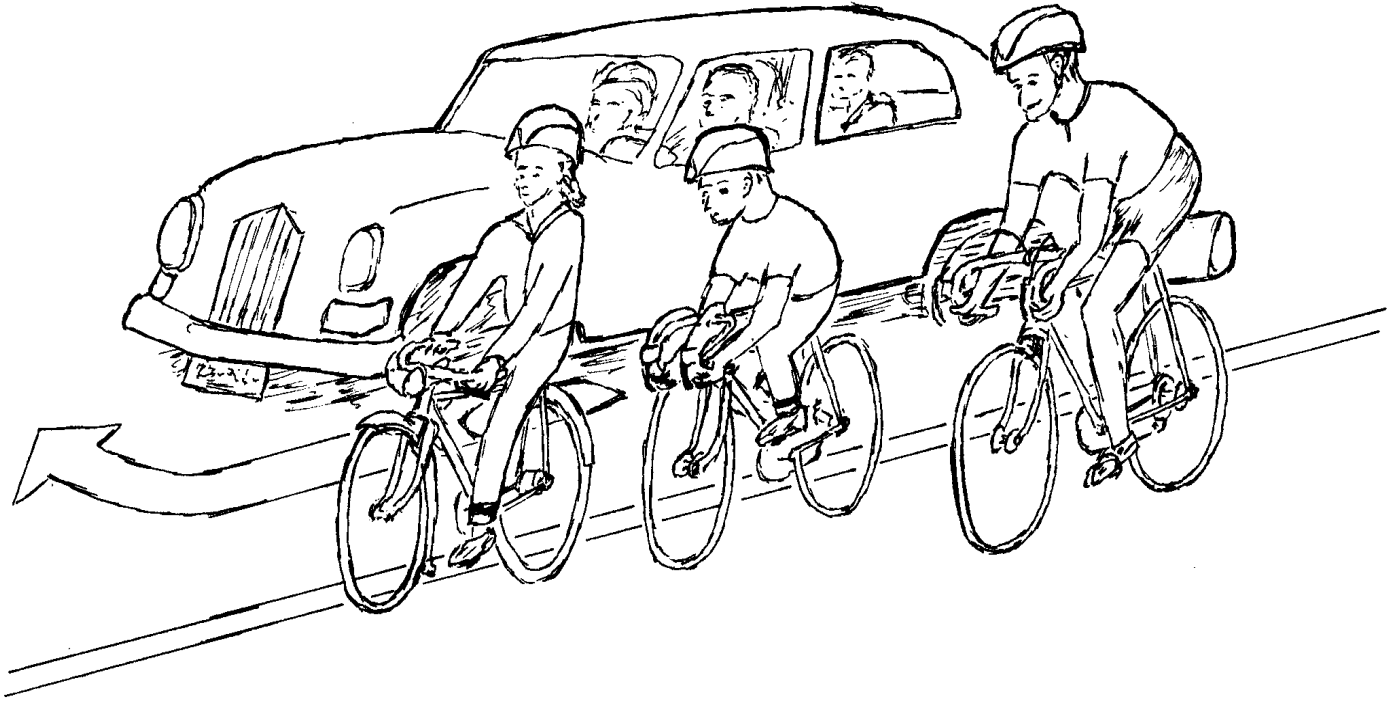


EFFECTIVE CYCLING AT THE INTERMEDIATE LEVEL



JOHN FORESTER, MS, PE

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1 INTRODUCTION TO OLDER STUDENTS, PARENTS AND INSTRUCTORS

This course teaches effective, traffic-safe cycling, the skills you need to go where you want by bicycle. Your pleasure, speed and safety depend most on knowing how to drive properly. The skills you will learn in this course have been proven by both scientific analysis and by millions of cyclists and motorists. They are the skills of driving vehicles in traffic. It doesn't matter whether you run on gasoline or on granola; you have to use the same skills.

The fastest and safest way to learn these skills is through the standard teaching sequence: the instructor EXPLAINS, the instructor DEMONSTRATES, the student PRACTICES, the instructor EVALUATES the student's performance, and the student PRACTICES AGAIN, BETTER. This starts on easy streets; as the students learn more and ride better the class moves to more difficult streets and traffic, until they ride as well as their age allows. Repeated practice on real streets in real traffic develops safe cycling skill. This works; successful students, even those in grade 3, ride better in the final driving test than average adult cyclists. Very few students fail that test.

The course text is divided into two parts: GETTING READY and TRAFFIC-CYCLING TECHNIQUE.

In GETTING READY you and your parent inspect your bicycle and adjust or repair it into proper operating condition. You cannot participate in class if your bicycle is unsafe or doesn't work properly. You also adjust your bicycle to fit your size. You will have difficulty, and may not be allowed to ride, if your bicycle is too big or too small, or is improperly adjusted for your size. The getting ready section also tells you how to pedal properly and how to use your gears, so that you will be able to ride faster and further before you get tired.

You can do and learn these things before class starts. The instructor may not take class time to teach them; he may only inspect to see that you have got ready for class by doing them properly.

The most important part of the class is TRAFFIC-CYCLING TECHNIQUE, and the instructor wants to spend as much time as possible in teaching it. Basic traffic cycling technique is not complicated; you will learn only 5 skills (Only 3 for grade 3). With these 5 skills you will be able to ride almost everywhere. For very complicated intersections with very heavy, high-speed traffic you will need more practice than you can get in class, and you may have to grow older to understand that traffic, but throughout your life, whenever you drive a vehicle you will use these 5 skills and they will see you through most traffic situations.

People who don't use these skills keep riding into trouble or accidents and never understand how they cause their own troubles and accidents. Even most American adults who use these skills when driving a car don't use them when driving a bicycle, because they were never taught how to drive a bicycle. Children who first learn these skills on a bicycle, as you will be doing, use them as they should, for both bicycles and cars. Children who learn when young are much safer on bicycles, and they learn to drive cars better and more easily.

1.1 THE FIVE BASIC TRAFFIC SKILLS

- 1: DRIVING ON THE RIGHT-HAND SIDE OF THE ROADWAY, NOT ON THE LEFT AND NOT ON THE SIDEWALK
- 2: HOW AND WHEN TO YIELD TO CROSSING TRAFFIC
- 3: HOW AND WHEN TO YIELD TO OVERTAKING TRAFFIC
- 4: DESTINATION POSITIONING AT INTERSECTIONS
- 5: SPEED POSITIONING BETWEEN INTERSECTIONS

All of the instruction helps you learn these 5 skills. There are many more traffic things it is handy to know, most of which you can learn by yourself. These are the 5 SKILLS that you MUST KNOW and that you LEARN ONLY THROUGH INSTRUCTION AND PRACTICE. That's why we take so much time to teach you how to use these skills well.

1.2 SPECIAL NOTE TO PARENTS: HOW TO HELP YOUR CHILD LEARN

The younger your child is, the more you can

help your child to learn to ride safely and properly. Children easily learn to copy what you do, but they find it harder to learn from spoken words and still harder from written words. The very best thing you can do for your child's cycling is to learn from this book and lead your child through the maneuvers; properly, just as we do in class. Learning from parents who ride properly is the best kind of learning there is.

Even if you don't have a bicycle, or can't ride one, you can help a lot by explaining the written words in your own spoken words. Traffic cycling is much easier to do than to explain. We have tried to make the written words as simple as possible, but they are still too difficult for grade 3 students and for many grade 5 students. When you read and learn from these written words, you can explain them to your child, amplifying them with gestures or model vehicles, and can answer his or her questions. This is important, because understanding why things are done in a particular sequence makes a driver much safer. The driver who understands can change his action when the situation changes, instead of just copying one sequence of actions. So help your child understand these words.

2 MECHANICAL SAFETY AND OPERABILITY
INSPECTION SIGN-OFF FORM

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PARTS TIGHTLY FASTENED ON

- Handlebar
Handlebar stem to steering tube
Brake levers to handlebar
Saddle to seatpost clamp
Seatpost to fraud clamp
Crank on axle (if 3-piece)
Pedals
Brakes
Derailleurs
Mudguards
Lights and reflectors
Handlebar plugs required
Carrier rack
Coaster brake arm
Other accessories
Front wheel
Rear wheel

GEARS

All gears work when pedalling hard?

CHAIN

Non-derailleur -- barely loose
Derailleur -- under spring tension in all gears

ROADSIDE REPAIR TOOLS

- Multi-socket wrench
6" adjustable wrench
Tire patch kit
Tire irons (2 or 3)
Pump that fits tire valve type
Screwdrivers as needed
Allen keys as needed
Saddlebag or other container on bike

NIGHTTIME EQUIPMENT

Headlamp that works
Rear reflector in visible position

ROTATING PARTS

- Front wheel
Rear wheel
Crank axle
Pedals
Steering bearings

BRAKES, HAND

- Cables not kinked
Cable inner wires, no broken strands
Blocks bear against rim only
Brakeblock holder front ends closed
Lever squeeze test, front
Lever squeeze test, rear

BRAKE, COASTER

Controllable, but will skid wheel

TIRES

- No cuts or bulges, good tread
Correct inflation pressure

The nighttime equipment is optional, depending on whether the child is permitted to ride at night. If need be installed only when preparing for a nighttime ride.

The roadside repair tools and the knowledge of how to make simple repairs are not required for the supervised course rides in the local neighborhood, but will save parents the trouble of retrieving children and bicycles in the case of mechanical failure at other times and locations.

If the item listed is not fitted, mark it NA for Not Applicable.

When the item is correct, mark it OK.

I have inspected the bicycle to be used by my child in the Intermediate or Beginning Level Effective Cycling Course, and I have corrected those items found defective. For those items not yet satisfactory, I assume responsibility for correcting them and for any injury caused by defect.

Parent or Guardian

for Child

address

date

3 EFFECTIVE CYCLING
Enrollment Card and Liability Release

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I wish to enroll myself or my minor child in the Effective Cycling Course of The Effective Cycling League of the level indicated below, to be:

taught by _____

under the sponsorship of _____

from (date) _____ to _____

on _____ days at _____ hours

at _____ location

for a fee of \$ _____

Beginning level _____

Intermediate level _____

Adult level _____

The instructor will teach Effective Cycling at the level indicated in accordance with the curriculum of the Effective Cycling League, the most effective and generally safest techniques of cycling that are known. At the Adult level the instruction will include practice in traffic cycling, fast descents, fast maneuvering and quickest stops in order to develop the competence necessary for safe cycling. It will also include how to look after yourself and your bike, how to develop your physical speed and endurance, and the enjoyment of cycling with a sociable group over pleasant roads. The Intermediate level short course concentrates on the traffic cycling technique necessary for safe cycling around town by upper-elementary and middle-school students. The Beginning level short course is suitable for lower elementary students (3rd grade) and concentrates solely on elementary traffic-cycling technique necessary for safe cycling in easy or moderate traffic as students of that age can understand it.

Students with medical problems which may be aggravated by exertion, or with hip, knee or

ankle problems, are advised to consult their physician before intensifying their cycling.

The undersigned participant or guardian recognizes that cycling is not an absolutely safe sport or transportation mode, and that accidents may occur despite all reasonable care on the part of both instructor and student. Both student and instructor hereby release each other, the Effective Cycling League, and any other sponsoring organization from claims resulting from cycling accidents during class.

Participant _____

Telephone _____

Address _____

Age (if under 18) _____

Date _____

Signatures:

Participant _____

Parent or Guardian _____

Instructor _____

Address _____

Telephone _____

4 INTERMEDIATE-LEVEL EFFECTIVE CYCLING PROGRAM FOR GRADE 7

SUGGESTED CLASS SCHEDULE: 15 periods of 45-50 minutes each.

Sess #	Text Sect	Type	Content
1		Lecture	Cyclists are drivers. Effective Cycling Video
2		Lecture Practical	Mechanical Safety Inspection. Tire Repair
3		Lecture	
4		Lecture Practical	Yielding to Cross Traffic Starting & stopping. Yielding to Cross Traffic 1
5		Lecture Practical	Yielding to Cross Traffic review Yielding to Cross Traffic 2. 2-mile ride, no left turns
6		Lecture Practical	Yielding to Same-Direction Traffic. 2-lane left turn Looking Behind. 2-lane Residential Street Left Turns
7		Lecture Practical	2-Lane Left Turns 2-Lane Left Turns with Traffic. 2-mile ride
8		Lecture Practical	Intersection Positioning Business District Ride. 2-Lane Left Turns. 3-mile ride.
9		Lecture Practical	Intersection Positioning Avoid Right-Turn-Only Lanes. 3-4-mile ride.
10		Lecture	Nighttime Safety. Riding in Rain. Multi-Lanes
11		Lecture Practical	Lane Changing. Multi-Lane Left Turns. Left-Turn-Only Lanes. 3-4-mile ride.
12		Lecture Practical	Lane Changing. Speed Positioning. Multi-Lane Left Turns, More Traffic. 3-4-mile ride.
13		Practical	Review Over Intricate Route, 3-4-miles.
14 & 15		Examination	Cycling Proficiency Testing. Written Exam. Questionnaires.

5 INTERMEDIATE-LEVEL EFFECTIVE CYCLING PROGRAM FOR GRADE 5

SUGGESTED CLASS SCHEDULE: 20 periods of 45-50 minutes each

Sess #	Text Sect	Type	Content
1		Lecture	Assign numbers. Show how to don. Collect bicycle inspection forms. With students on bicycles leaning against wall, inspect for major mechanical items and for correct posture adjustments. Short lecture on traffic system and cooperative cycling.
2		Lecture	Effective Cycling Video. Intro talk first, discuss after.
3		Lecture Practical	Yielding to Cross Traffic Driveway exiting. Residential street stop sign practice.
4		Lecture Practical	Yielding to Cross Traffic Review. Stop sign practice across street with several cars a minute. Practice in estimating speed and distance clearance.
5		Lecture Practical	Yielding to Overtaking Traffic. Looking over shoulder playground practice and test. Left turns at residential intersection.
6		Lecture Practical	Review of previous. Left Turns. Left turns at residential intersections.
7		Lecture Practical	Left turn review. Left turns on collector street with more traffic. Practice in estimating speed and distance clearance.
8		Lecture	Fun ride with review of previous
9		Lecture Practical	Intersection positioning with left-turn-only lanes. Left turns at 2-lane intersection with left-turn-only lane.
10		Lecture Practical	Four-way stop signs. Concept of taking turns. Practice at appropriate intersection.
11		Lecture Practical	Review all previous. Review ride.
12		Lecture Practical	Traffic signals. Straight, right, and left at traffic signal.
13		Lecture Practical	Intersection positioning by avoiding right-turn-only lanes. Practice in going straight at intersections with right-turn-only lanes.
14		Lecture Practical	Intersection positioning on 4-lane streets. Ride with left, straight, and right turns at 4-lane intersections with light traffic.
15			Repeat 14

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Sess #	Text Sect	Type	Content
16		Lecture Practical	Speed positioning with emphasis on not overtaking between slow car and curb, or between bicycle and curb. Ride performing all maneuvers in shopping traffic.
17			Repeat 16
18		Lecture Practical	Review. Talk on interacting with motorists in complicated situations, using examples that have arisen during practice. Ride in shopping traffic.
19 & 20		Examination	Cycling Proficiency Testing & Written Exam.

6 ELEMENTARY-LEVEL EFFECTIVE CYCLING PROGRAM FOR GRADE 3

SUGGESTED SCHEDULE : 20 periods of 45-50 minutes each

Sess #	Text Sect	Type	Content
1		Lecture	Assign numbers. Show how to don. Collect bicycle inspection forms. With students on bicycles leaning against wall, inspect for major mechanical items and for correct posture adjustments. Short lecture on traffic system and cooperative cycling.
2		Lecture	Effective Cycling Video. Intro talk first, discuss later.
3		Lecture Practical	Yielding to Cross Traffic. Driveway exiting practice.
4		Lecture Practical	Yielding to Cross Traffic Stop sign practice.
5		Lecture Practical	Yielding to Cross Traffic, quick oral review. Ride with stop-signed intersections.
6		Lecture Practical	Review of previous week's work. Looking over shoulder. Yielding to overtaking traffic. Playground circuit looking over shoulder practice and test.
7		Lecture Practical	Left Turn Technique Residential intersection practice.
8		Lecture	Left Turn Review. More residential intersection practice.
9		Practical	Fun ride with residential stop signs, right turns, left turns, and a short, fast ride for fun.
10		Practical	Stop sign practice across street with medium traffic. Ride to appropriate location. Practice in estimating speed and distance clearance.
11		Practical	Review ride. Review all basics on residential streets.
12		Practical	Review ride. Review all basics on residential streets. Fun ride return.
13		Practical	Review ride. Review all basics on residential streets. Fun ride return.
14		Lecture Practical	Traffic Signals. Practice at a 2-lane traffic signal.
15		Practical	Review and fun ride.
16		Lecture Practical	Yielding to Overtaking Traffic Review. Left turns on medium-traffic collector street, where students can expect to interact with cars from both directions. Some groups may not reach this level; for them, more left turn practice on low-traffic streets.

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Sess #	Text Sect	Type	Content
17		Lecture Practical	Repeat 16 Repeat 16. Progress as far as each group warrants.
18		Practical	Review all previous by review ride.
19 & 20		Examination	Cycling Proficiency Test. Simple written examination.

7 GETTING READY TO RIDE

7.1 BICYCLE MECHANICAL CHECK

The mechanical check asks 7 questions:

- 1 Are all parts tightly fastened on?
- 2 Are tires fully inflated and free of cuts?
- 3 Are all rotating parts properly adjusted?
- 4 Will the brakes stop me quickly?
- 5 Do the gears change and drive properly?
- 6 Can I see and will I be seen if I ride at night?
- 7 Do I have the proper tools for roadside repair?

7.1.1 PARTS TIGHTLY FASTENED

All parts must be tightly fastened on, and all adjusting clamps must be tight. Pull, push and twist each of these parts to see whether it is loose. If it is loose, tighten it or its clamp. Saddle, handlebars, handlebar stem, brake levers, brakes, cranks, pedals, derailleurs, carrier rack, mudguards, lamp, reflectors, other accessories.

Because a loose wheel is especially dangerous, wheels require a special check. You have to see that the nuts or quick-releases are tightly clamped. For nutted wheels, put a wrench on each nut and tighten it properly. For quick releases, open and close each one. It must take force to close, but must close completely so that the lever is next to the frame. If it doesn't, release the lever and adjust the nut on the other end until the lever closes properly.

7.1.2 TIRES

Tires should be inflated to the pressure marked on them. Check with a gauge until you learn the correct fingersqueeze feel.

Tires should have all cuts repaired, have no bulges, and have no cords showing through worn tread.

7.1.3 ROTATING PARTS

Every rotating part should turn freely but not be loose enough to shake more than the smallest

amount you can feel. Test wheels, cranks and pedals by turning them and trying to shake them. Any that are too stiff or too loose require adjustment or repair.

The steering bearings must be most carefully adjusted. See that the handlebars turn freely. Then lock the front wheel either with the front brake or by steering the front wheel against a wall. Rock the bike forwards and backwards. If the front forks move relative to the frame, the steering bearings need adjustment.

The wheels and the chainwheels should not wobble when they are turned. Spin each wheel and then the cranks. If a wheel or chainwheel wobbles as it spins, it needs straightening.

7.1.4 BRAKES

Squeeze hard on each brake lever in turn. There should be room for a finger between the lever and the handlebar. If not, the brake cable needs tightening, either at the screw adjuster or at the cable bolt.

Examine the brakeblocks. The entire face of the block should contact the rim and not the tire, and the front end of the brakeblock holder must be the closed end. Reposition if necessary. If there is less than 1/8" of rubber outside the holder, get new brakeblocks.

Examine the brake cables. If the outer housing is kinked or its coils are pulled apart it must be replaced. If the inner wire has broken strands, which generally start inside the lever or at the brake end of the housing, it must be replaced.

7.1.5 GEARS

Make sure that all gears work. For derailleur bikes, have somebody hold the rear wheel off the ground. Then turn the cranks and shift through all the gears. Both front and rear derailleurs must move far enough to move the chain onto each sprocket or chainwheel, but not so far that the chain falls off. Adjust to correct either problem.

On hub-gear bikes, shift into each gear in turn. When in each gear, lock the rear wheel by standing the bicycle on the ground. Then test the gear adjustment by forcefully slamming the crank forwards. If the hub slips out of gear, at least the gearshift cable needs adjustment.

7.1.6 NIGHTTIME EQUIPMENT

If you plan to ride at night you must have a headlamp and rear reflector. Make sure both are firmly fastened on. Make sure that the lamp or generator works. Make sure that the rear reflector is large (3" across, preferably amber in color) and is positioned so it can be seen from behind, even when you are carrying a load.

7.1.7 ROADSIDE REPAIR TOOLS

Each cyclist should be equipped with tools for roadside repair. Multi-socket (dogbone) wrench, 6" adjustable wrench, tire patch kit, tire irons, pump, wide and narrow-bladed screwdrivers, and Allen (hex) keys of the sizes required.

7.2 COMFORTABLE, EFFICIENT CYCLING POSTURE

7.2.1 POSTURE ADJUSTMENTS

Your bike supports you at three places -- saddle, handlebars and pedals.

You will be most comfortable and least tired if you position yourself so that part of your weight rests on each support. Your bike has 5 adjustments to help you get a comfortable and efficient posture. Start out by adjusting your bike to yourself according to these instructions, but remember that everybody is different and the most important thing is to be comfortable yourself.

7.2.2 PROPER BICYCLE SIZE

The first "adjustment" is buying the right size bike. It is the proper size for you if you can just straddle the top tube comfortably while standing flatfooted.

7.2.3 SEATPOST & STEM ADJUSTMENTS

The basic adjustments are made by sliding the seatpost and handlebar stem up or down in the bicycle frame. The seatpost is clamped by a bolt just behind where it slides into the frame. Loosen the bolt and twist and slide the seatpost up or down. The handlebar stem is clamped by a wedge inside the steering tube. To loosen the handlebar stem, first loosen the bolt at its top by 2 turns. Then loosen the wedge by knocking the bolt down with a hammer (protect the chrome plating with a block of wood). That should loosen it so you can twist and slide it up or down.

Both seatpost and stem must be inserted at least a certain amount, or they may break off. The

seatpost must have at least 2-1/2" inside the frame. The handlebar stem must be inserted to at least 1" above the slot or angle-cut for the wedge. Pull both out and mark the distance with a waterproof felt pen (laundry marker). Modern stems and seatposts are marked at the extension limit; this mark must not show outside the bicycle frame.

Seatposts and stems can corrode so you'll never move them. Always grease them before re-inserting.

7.2.4 SADDLE HEIGHT

The basic adjustment is saddle height. Sit on the saddle with heels on the pedals and rotate the cranks. This first adjustment is correct if you can just keep your heels on the pedals all the way round without rocking your hips.

7.2.5 HANDLEBAR HEIGHT

Adjust the handlebar so its top (or the grips of flat or raised bars) is level with or 1" below the saddle top.

7.2.6 SADDLE ANGLE & POSITION

Loosening the saddle clamp permits you to tilt the saddle and to slide it forwards or backwards. Set it level, and slide it forwards until you feel comfortable when reaching for the top of the handlebars. For easy pedalling you must lean forwards so part of your weight is on your hands. How much you lean depends in how fast you ride. Even if you ride slowly, lean forward somewhat or whenever you pedal you will have to pull yourself forward, which is unnecessary effort.

7.2.7 HANDLEBAR FORWARD POSITION

If the handlebar feels much too far forward, or backward, even with the saddle adjusted, then it will be necessary to buy a new stem with a different forward reach than the one you have. However, don't do this at the start, because you will change your view about comfort after some experience. Just remember, that this can be done, when you really know what you want.

7.2.8 HANDLEBAR ANGLE

Tilt the handlebars in the handlebar stem so the angle of the lower grips is comfortable to your hands. For most people with dropped handlebars the free end of the bar should point somewhat above the rear axle but below the top of the rear tire. This distributes your shoulder weight evenly across the palm of your hand, reducing the

chance of numb fingers.

7.2.9 BRAKE LEVER POSITION

Once the handlebar tilt is correct, loosen the brake levers and slide them so that the brake lever bracket is horizontal or slightly up in front. Then retighten it. With the levers in this position you should be able to easily reach the levers with all four fingers when your hands are down and forwards in the "hooks" of the bars. If you have auxiliary brake levers, consider removing them; they cannot be trusted for hard stops or for good steering control.

7.2.10 SADDLE COMFORT

Saddle comfort is important. Because everybody is different there are different shapes of saddle to fit different people. If changing the tilt of the saddle doesn't get it comfortable try another make. Metal saddles with padded tops are never comfortable. Mattress-type saddles may be comfortable for short trips but not for longer trips. The leather or plastic sporting-type saddle that fits you is most likely to be comfortable -- if you have trouble finding a comfortable fit try borrowing different types to try out. Women tend to have more discomfort than men, because their genitals cannot roll to one side, so continued pressure against a poorlyfitting saddle can become very painful. If a woman has this problem she should try three things: a saddle that is wider at the rear may move the contact points rearwards; cutting a hole in the center of the nose of a leather or plastic saddle just at the place where it hurts will relieve the pressure on the tender place; some womens' saddles already have a centerline groove to prevent this pain.

After you have ridden a while you should experiment by making small changes -- particularly if you find aches or pains. The most important thing is to be comfortable in the kind of cycling that you choose. Don't try to look like a racer if you don't race but, equally important, don't sit straight upright unless you ride only short distances slowly.

7.2.11 PROPER POSTURE

When you are properly positioned on your bike and have developed a smooth pedalling action you should look like this:

1) Legs almost straight, but not quite, at the bottom of the pedal stroke when the ball of your

foot is properly positioned over the center of the pedal.

2) Body leaned forwards from the hips, with only a little curve in the back. More curve for faster cycling with lower handlebars.

3) Arms reaching forwards and down for the handlebars, with elbows almost straight and wrists at a comfortable angle.

4) Head held high enough so you can look ahead easily along a level road.

7.2.12 STARTING & STOPPING POSITION

Most beginners say that the recommended saddle height is too high, because they can't reach the ground with their feet. That's right; with the correct saddle height you cannot sit on the saddle and touch the road. Whenever you start or stop, you must move forward off the saddle.

To start, straddle the bicycle. Move one pedal up and forwards, then stand on it to get the bike moving. Then put the other foot on its pedal, start pedalling and then move backwards to sit on the saddle.

To stop, slow down. Set one pedal low, the other high. Stand up and forward onto the low pedal, moving forwards off the saddle. Swing your free foot forwards and clear of its pedal. Apply brakes to stop. Just before you stop, steer away from your free foot, so you lean towards it. Bend your standing knee, and your free foot goes on the ground to keep you upright. You are standing up astride the bicycle in front of the saddle.

7.3 EASY PEDALLING

7.3.1 STYLE

Easy pedalling requires the whole leg from hip to toe, with every muscle doing its share. Remember that you don't push the pedals down, you twirl them round and round.

First, place your foot carefully on the pedal so the joint of the big toe in the ball of your foot is exactly over the pedal spindle. Don't let your foot slip forwards so that you pedal with your instep. To divide up the work between the various leg muscles and to prevent your calf muscles from getting stiff and sore your foot must flex up and down at the ankle joint almost as if you were walking or

running. As the pedal rises, bring your toe up first, so that as the pedal reaches the top your foot is ready to push it forwards. Then think about pushing it forwards, then downwards, and finally backwards. When your pedal is almost at the bottom your toes should be positioned downwards so you can push backwards as much as possible. Then when the pedal starts up you quickly bring your toes from down to up, so you are ready again to push forwards.

Always keep thinking: “Twirl the pedals round and round and round,” and practice making circles with your feet every time you can until the action becomes automatic. The hallmark of the stylish and efficient cyclist is a steady flow of power all round the pedal circle.

To pedal really easily and efficiently you need to learn to use toeclips and straps, or one of the newer clipless pedal systems. You have much more endurance and feel much less fatigue if you pedal rapidly in medium gear than if you pedal slowly in high gear. You will go furthest fastest with a cadence of about 100 pedal revolutions per minute, which is more like running at 200 steps a minute than walking at 100 steps a minute. Only with toeclips and straps, or the newer equivalents, can you keep your feet properly positioned on the pedal at this cadence, so as soon as you feel comfortable on your bike it is time to learn to use them. Once you’ve learned you will never ride without them. If you learn to use clips and straps you will soon graduate to adding cleats, metal or plastic plates fixed to the shoe soles, with grooves which engage the back bar of the pedals so the feet can’t slip. All of the clipless systems combine clip, strap and cleat into a unified shoe and pedal system, so that you learn all at once.

7.3.2 USE YOUR GEARS FOR HIGH PEDALLING CADENCE

You don’t use your gears just to climb hills. You use your gears to match your body’s best performance to the conditions, so you can keep pedalling at high cadence under almost all conditions. High gear on most bikes is too high for easy riding on the level, but you see many people straining in their highest gear through traffic at low speed. That’s both slow and tiring. You will do better. Here’s how.

7.3.3 KNOW YOUR GEARS

7.3.3.1 SELECTING YOUR GEARS INACCURATELY

Most derailleur bikes are equipped with poorly-selected gear combinations, although when there are 12 to 18 gears there are so many that you can more easily reach a useful gear for the conditions. A crude method for selecting which gear to use is to use the large chainwheel for good conditions, downhill or on the level with the wind behind. Use the small chainwheel for climbs or with the wind in your face. Then change the rear derailleur until you find a gear that suits the conditions. Paragraph 1.3.4 discussed how to tell which gear suits your condition and the road conditions.

7.3.3.2 SELECTING YOUR GEARS ACCURATELY

To select your gears accurately you must first learn which gears are available on your bike and how to shift into each one. “Gear” is a number of inches which is calculated by the formula: (Wheel Diameter) x (Number of Teeth in Front Chainwheel) / (Number of Teeth in Rear Sprocket). This is easily calculated with a pocket calculator. The bigger the number the further you go for each revolution of the pedals. This doesn’t mean that the bigger the gear the faster you will go, because most derailleur bicycles have some gears that require more strength than average cyclists possess. These gears are for going faster downhill, not for level ground.

$$\text{Wheel Dia} \times \text{Front Teeth} / \text{Rear Teeth} = \text{Gear}$$

The formula requires the wheel diameter in inches and the number of teeth in each of the rear sprockets and in each of the chainwheels. You can’t rely on the marked size of the tire to tell you; measure the diameter and round it to the nearest inch. Precision is not important here, for you are more interested in the correct relative gear sizes than in absolute values.

Number your rear sprockets from the largest to the smallest, 1 to 6 or 1 to 8. Name your chainwheels small, middle and large. List these and next to each name place the number of teeth. Then make a list that allows for all of these combinations, giving 10 or 12 or even 18 different gears. Then test your bicycle to see whether all of these are available. You may find that you can’t use the smallest chainwheel with the smaller sprockets because the chain goes slack. You may find that using either the smallest or the middle (if you have

one) chainwheel causes the chain to rub against the largest chainwheel. Cross these unusable combinations off the list. Now calculate the gear for each of the remaining combinations. Then make a new list putting these in order of increasing gear number, together with the chainwheel and sprocket combination that produces each gear. Where two adjacent gears are almost the same, discard the one that requires the more shifting movements. The gears that remain are your shift sequence.

The shift sequence on your bike may be too complicated to remember. Then just follow the rule for inaccurate selection, but you now know the gear that is produced by each combination. Write this gear list on a small slip of tape and stick it to your handlebar or stem where you can easily read it.

7.3.3.3 GEARS ON HUB-GEARED BICYCLES

Practically all multi-gear hubs have the same ratios. The middle gear is the one that you would calculate from the wheel diameter, sprocket teeth and chainwheel teeth using the formula given above. The high gear is 1.33 ($\frac{4}{3}$) times middle gear and the low gear is .75 ($\frac{3}{4}$) times middle gear. Hubs with unusual ratios are supplied with a gear specification sheet.

7.3.4 WHICH GEARS TO USE

As a beginner, you should ride on the level in gears in the middle, no higher than 70". For hills, headwinds, and in slow traffic with many stops and starts you should be in lower gears. If you do not use toe clips you should be able to achieve 60 pedal rpm, which in 70" gives you 12.5 mph. (Miles per hour equals Pedal Rpm x Gear x 0.003) If you achieve 60 rpm without toeclips, then graduate to using toeclips and straps, and then cleats. If you achieve 100 rpm with toeclips, then raise the gear and raise the bicycle speed to maintain the 100 rpm. If you do this well you will be among the better-conditioned cyclists.

7.3.5 1.3.5 GEARS FOR DIFFERENT CONDITIONS

The basic principle of using the gears is to change gears to maintain high pedal cadence when conditions get difficult. As the hill gets steeper, don't slow down and wait until your legs hurt before changing gear. Change gears the moment that your pedal cadence drops, and change gears only as much as is needed to main-

tain cadence. If one change isn't sufficient, then you will slow down a bit more and make another change.

If you can remember your shift sequence, go down the sequence as you remember it. If you can't remember it, shift to the small chainwheel for climbing hills and headwinds and to the large chainwheel for descents and tailwinds, and then go up or down the sequence of rear sprockets until you find the right gear.

7.3.6 CHECKING YOUR CADENCE

Since high cadence is so important in achieving easy-cycling endurance, you should check your cadence until you learn to pedal fast without thinking about it. One way is to use the more complicated kind of electronic speedometer that reads pedal cadence directly. The usual way is to use a watch that shows seconds. Just ride along a level road with few interruptions, counting "right feet" for fifteen seconds and then multiplying by 4. If you ride with a club, change gears until you pedal as fast as the better cyclists, which will get you into the 80 to 100 rpm range.

8 TRAFFIC-CYCLING TECHNIQUE

8.1 RIDE ON THE RIGHT

All vehicles travel on the right-hand side of the road. Study Figure 1

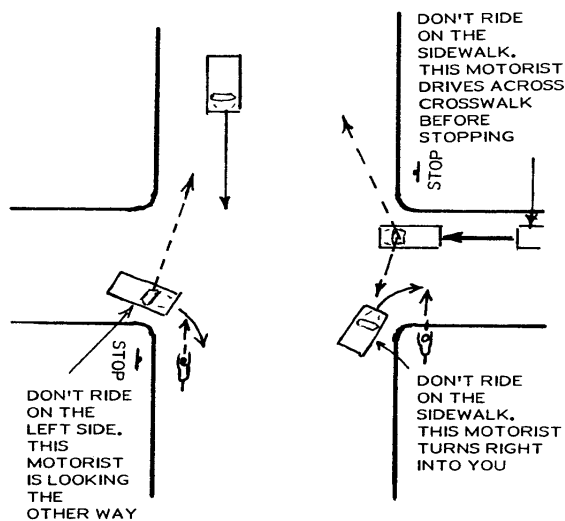


Fig 1: Ride on the Right-Hand Side of the Roadway

The roads are built for right-side travel. The traffic signs and signals face the right-side driver. Because traffic moves on the right-hand side, drivers look for other traffic on the right-hand side. They do not look on the left-hand side of the road for traffic, so they won't see you if you ride on the left-hand side. Even if they see you on the left-hand side they don't know how to steer around you.

Any driver who drives on the lefthand side of the road won't drive very far before an accident stops him. Because bikes are small enough to fit through many holes in traffic, cyclists who ride on the left-hand side can survive for a little while, but:

Driving bicycles on the left-hand side of the road is the biggest single cause of car-bike collisions.

If you ride on the right you can make the traf- fic system work for you; if you ride on the left you must fight the traffic system everywhere, all the time, and you will sooner or later suffer the conse- quences of trying to fight with a car.

8.2 YIELDING RIGHT-OF-WAY

Two vehicles can't occupy the same space at the same time. That's called a collision.

Whenever two drivers must use the same place one has to wait for the other. That's what yielding means: WAITING FOR THE OTHER DRIVER TO GO FIRST.

DON'T RIDE ON THE LEFT SIDE. THIS MOTORIST IS LOOKING THE OTHER WAY

DON'T RIDE ON THE SIDEWALK. THIS MOTORIST DRIVES ACROSS CROSSWALK BEFORE STOPPING

DON'T RIDE ON THE SIDEWALK. THIS MOTORIST TURNS RIGHT INTO YOU

When people walk toward the same doorway, we can trust them to talk, smile, and decide which one will wait for the other. Besides, if they make a mistake, rubbing shoulders isn't painful.

But when people drive at highway speeds the distances are too great and time is too short to talk and decide which one will wait for the other. So we have rules to say which driver will wait for the other. When both drivers know the rules the driver who has the right of way can keep travelling fast because he knows that the other driver will yield the right of way (that is, wait until the first driver has moved past).

If you know the rules you can use them in two ways:

1) If you have the right of way you know that you have the right to keep moving with very little danger.

2) If you don't have the right of way, you protect yourself from collision by yielding to the traffic that has the right of way.

So knowing the right-of-way rules lets you both move quicker when it is safe to do so, and protects you when it would be dangerous to proceed.

The right-of-way rules are not based on who you are or what kind of vehicle you use. They are based only on traffic conditions, the type of road

that you are on and what you want to do. As a cyclist (bicycle driver) you have the same rights and duties as other drivers of cars, buses, trucks or horses. (There are some exceptions, but they do not affect right of way.)

The right-of-way rules cover two different types of situation:

Crossing traffic in which one driver crosses the path of another.

Same-direction traffic in which one driver moves in front of another.

8.2.1 HOW TO YIELD

Yielding requires 3 actions: DECIDING, LOOKING and WAITING.

You must first DECIDE "WHO MUST YIELD THE RIGHT OF WAY?" To decide, you must know the right-of-way rules. There are many right-of-way rules, but three are most important.

1) Where a bigger road crosses a smaller road, drivers on the bigger road have the right-of-way and drivers on the smaller road must yield.

2) Where there is a STOP sign or YIELD sign, drivers facing the word STOP or YIELD must yield while drivers not facing the STOP or YIELD have the right of way.

3) Every driver who wants to move sideways into a new line of traffic or to turn must yield to traffic in the new line.

If you have the right of way, keep going.

If you should yield, you must LOOK UNTIL YOU SEE THAT NOBODY IS COMING. You are not looking for traffic; you are looking for NO TRAFFIC.

To look, you have to WAIT. You must ALWAYS WAIT LONG ENOUGH TO LOOK. If you see that nobody is coming, you may go. If you see anybody coming, you must wait until they pass by. Then you LOOK AGAIN, AND AGAIN IF NECESSARY, UNTIL YOU SEE THAT NOBODY IS COMING. WHEN YOU SEE THAT NOBODY IS COMING, YOU MAY GO.

8.3 WHEN AND HOW TO YIELD TO

CROSSING TRAFFIC

8.3.1 WHEN TO YIELD: RIGHT-OF-WAY RULES FOR CROSSING TRAFFIC

There are two right-of-way rules for crossing traffic; that is, for drivers who meet at an intersection.

1) The driver on the less important road must wait for the driver on the more important road. For example, the driver in a driveway must wait for traffic on the street. Likewise, the driver on a residential street must wait for traffic on an arterial street (a main through street). Because you can't tell an important street as you are driving towards it, local governments install STOP and YIELD signs protecting traffic on the more important streets. The driver who faces the STOP or YIELD sign knows that he must wait for traffic on the other street. The driver who sees the backs of the STOP or YIELD signs that protect him knows that he is protected, so he keeps moving fast. Generally, the more important streets have faster speed limits and faster traffic than less important streets. Study Figure 2.

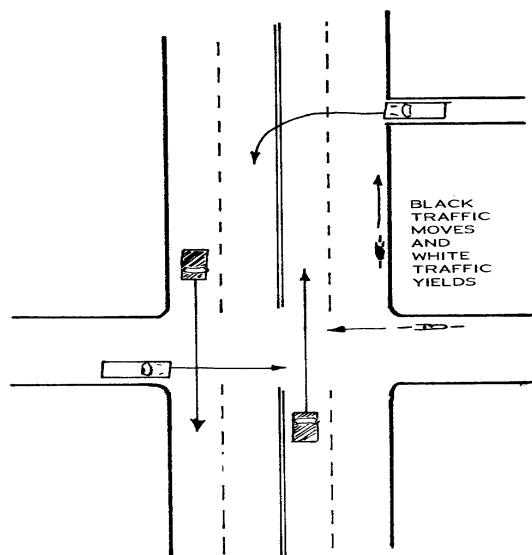


Fig 2: Right-of-Way Examples

When two unimportant streets intersect without a STOP or YIELD sign, the later driver must wait for the earlier driver. It's first come, first served. However, because of the danger both drivers should go very slowly at these uncontrolled intersections. Some don't, so you ought to yield to all approaching traffic at minor intersections.

8.3.2 HOW TO YIELD TO CROSSING TRAFFIC

Yielding means WAITING FOR OTHER TRAFFIC. But as you approach an intersection you often cannot see traffic on the cross street until you are right at the edge of the intersection.

Yielding does not mean: WAIT ONLY FOR THE OTHER TRAFFIC THAT YOU HAPPEN TO SEE.

Yielding means: NOT ENTERING THE INTERSECTION UNTIL YOU HAVE TAKEN THE TIME TO LOOK ALONG THE CROSS STREET AND HAVE SEEN THAT NOTHING IS COMING.

At most intersections -- and all safe ones unless they have a signal -- you can see along the cross street before you enter the traffic lane, and thus before getting into a possible collision situation. The point where you can look along the cross street is the visibility point, the edge of the traffic is the traffic line. Between the visibility point and the traffic line you must allow sufficient time to:

- 1) Look both ways
- 2) Wait until there is a gap in traffic
- 3) Tell by looking that nothing is coming from either direction (unless too far away to arrive before you get across)
- 4) Only then can you safely go across

One way to get sufficient time for waiting and looking is to travel VERY SLOWLY between the visibility point and the traffic line. That means as slow as you can stay upright on your bike -- no faster than that. The slower you can ride the more time you have; the more time you have, the greater chance that there will be a gap in traffic before you get so near the traffic line that you have to put your foot down to hold yourself up while stopped. Study Figure 3.

8.3.3 RIGHT OF WAY FOR LEFT TURNS

Any driver intending to turn left (except from a 1-way street) has to turn across the path of traffic coming from the opposite direction. The turning driver has to yield to the straightthrough driver. This is the same kind of yield as for crossing traffic: the turning driver must look and wait until he sees that nothing is coming from the opposite direction. Study Figure 4.

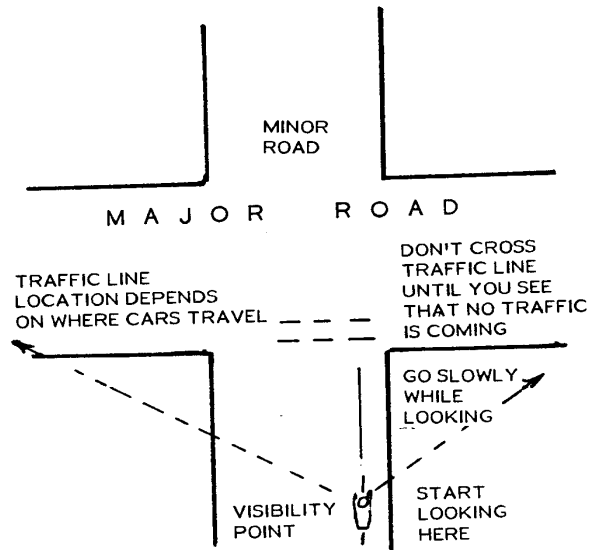


Fig 3: Yielding to Crossing Traffic

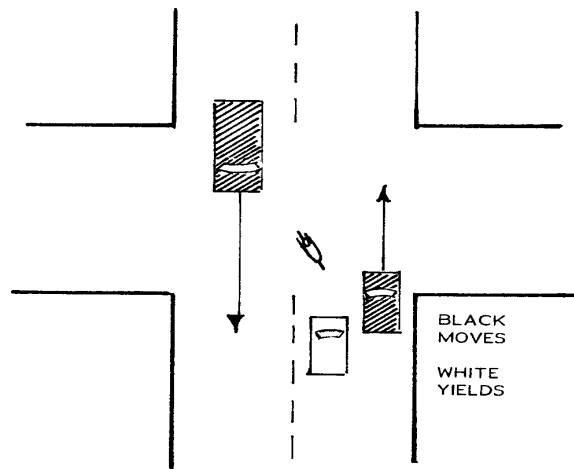


Fig 4: Right-of-Way for Left Turns

8.3.4 RIGHT OF WAY AT TRAFFIC SIGNALS

Traffic signals are installed to tell people the right-of-way at busy intersections where heavy traffic or difficult conditions make it too difficult to see who has the right of way. Basically, a green signal gives the right of way, a red signal requires stopping until it turns green. A yellow signal says STOP IF YOU CAN, SPRINT IF YOU MUST, because the red will be next.

However, you don't have to stop on red until you reach the stop line, which is usually painted on the road before the intersection. Naturally, a

cyclist approaches a red signal slowly, hoping that it will turn green before he reaches the stop line. The closer he gets the slower he goes, until either the signal turns green or he creeps up to the stop line and has to stop.

8.4 WHEN AND HOW TO YIELD TO OVERTAKING TRAFFIC

8.4.1 WHEN TO YIELD: RIGHT-OF-WAY RULES FOR SAME-DIRECTION TRAFFIC

Every driver has to look far ahead of his vehicle because he needs time and distance to think about what to do and his vehicle needs time and distance to turn or to stop. If the driver looked only a foot or so ahead of his vehicle he could not steer around or stop for anything he might see ahead of him. How far ahead he must look depends on his speed: the faster he goes the further ahead he must look to be able to control his vehicle for what he sees ahead. This distance the driver must look ahead is called his SAFETY DISTANCE.

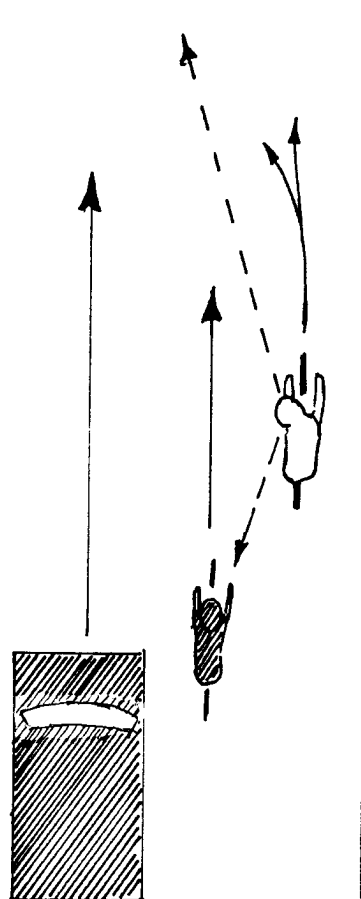
Suppose that Driver A has to look 400 feet ahead for the speed at which he is going. He drives safely because he can see much further than 400 feet and he sees that he has a clear traffic lane ahead, even though there are vehicles (cars, trucks and bicycles) parked at the curb. Now Driver B in one of those parked vehicles drives away from the curb into Driver A's path but only 200 feet ahead; that is, only one half of Driver A's safety distance. Driver A sees Driver B's vehicle moving into his path, but whether he tries to turn or to stop it is already too late. No matter what Driver A does, there will be a collision, and it is all Driver B's fault because he drove into Driver A's safety distance.

Therefore, the right of way rule for same-direction traffic says: EVERY DRIVER WHO WANTS TO MOVE INTO A NEW LINE OF TRAFFIC MUST YIELD TO TRAFFIC ALREADY IN THAT LINE. It doesn't matter whether you want to move toward the center of the road or toward the edge of the road. If there is room for another vehicle, even a bicycle, to travel in that line you must yield to all traffic in that line.

8.4.2 HOW TO YIELD TO SAME-DIRECTION TRAFFIC

Remember what "yielding" means. It means: LOOKING AND WAITING UNTIL YOU SEE THAT NO TRAFFIC IS COMING.

When you want to change lanes there is no problem about slow-moving traffic ahead of you. If a car is stopped ahead in the lane you want to use you won't steer towards it to hit its back bumper. You have more sense than that, to drive directly into a car that you can see. But you also have to look over your shoulder for faster traffic, because you may be moving into the safety distance of a faster driver. BEFORE MOVING SIDeways ON THE ROAD YOU MUST LOOK OVER YOUR SHOULDER FAR ENOUGH BEHIND AND LONG ENOUGH TO SEE THAT NO FASTER TRAFFIC IS COMING. This takes practice, but with practice it is easy. Study Figure 5.



BLACK MOVES & WHITE YIELDS.
BEFORE CHANGING LANES,
LOOK FORWARDS & BACKWARDS
TO BE SURE THAT
THE NEW LANE IS EMPTY

Fig 5: Yielding to Same-Direction Traffic

It also takes time and distance. Suppose you see a faster driver approaching. Then you must continue in a straight line while waiting until he passes you. Then you can look again, and another driver may be coming. Meanwhile, you are getting closer and closer to where you want to move to the center of the road to make a left turn. This means that if you want to overtake a slower driver -probably at first a slower cyclist -- or to move to the center of the road for a left turn, you must start looking behind early. Give yourself plenty of time and distance to continue in your present line of travel just in case there is a lot of faster traffic. The more time and distance you allow before you have to make your move, the more likely that there will be a gap in traffic for you to use. NEVER FORCE YOUR WAY INTO A LINE OF FASTER TRAFFIC, SO ALWAYS USE AN EARLY GAP IF ONE APPEARS.

As you improve your physical condition for cycling you will ride faster, which makes lane changing much easier by reducing the speed difference between you and the cars. Also as you get more traffic experience you will learn how to persuade other drivers to let you into their line of traffic with much smaller gaps than you need as a beginning cyclist.

But no matter how powerful or skillful you become, EVERY CYCLIST MUST LOOK OVER HIS SHOULDER BEFORE MOVING INTO A NEW LINE OF TRAVEL. Even the motorists driving fast cars have to look over their shoulders before changing lanes.

8.4.3 TWO-STEP LANE CHANGING

When there is other traffic nearby each lane change requires 2 steps.

Because a bicycle is so narrow, a car and a bicycle can often share a traffic lane side by side. Therefore, when you move into a lane at a safe distance in front of a faster motorist, that motorist may choose to keep coming and to overtake you in that lane. Therefore, when the lane is sufficiently wide for both a motorist and a cyclist side by side, you must make each lane change in 2 steps. The first step is just across the lane line into the new lane. Then you look behind again to see if you still have room to move across into the center or to the other side of that lane. Study Figure 6.

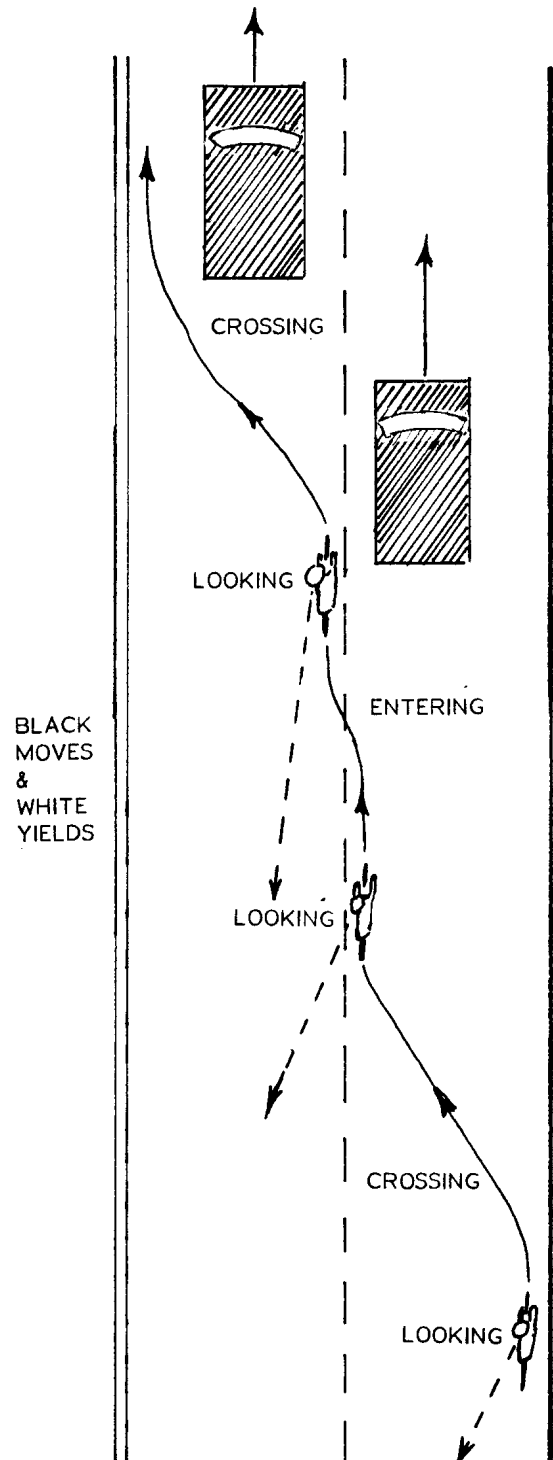


Fig 6: Two-Step Lane Changing

8.5 DESTINATION POSITIONING WHEN APPROACHING INTERSECTIONS

8.5.1 PROPER ROADWAY POSITION FOR INTERSECTIONS

The word “destination” means the place you are travelling to. When you come to an intersection you may turn right, go straight, or turn left, depending on where your destination is. YOUR PROPER ROADWAY POSITION WHEN APPROACHING INTERSECTIONS DEPENDS NOT ON YOUR SPEED BUT ON THE TURN THAT YOU ARE GOING TO MAKE. You can intend to go RIGHT, STRAIGHT, or LEFT, and you must get properly positioned before reaching the intersection.

Intersections are complicated places where most collisions occur. Every driver has to look in several different directions in a very short time, so it is easy to make mistakes. Experience has shown that drivers cannot reliably look ahead at the intersection and at the same time look behind for overtaking traffic. It's just too complicated to look, observe and understand everything at once. Naturally, you have to look ahead to steer where you are going without hitting anybody. So we arrange that you do all the necessary looking behind in the straight part of the road before you reach the intersection and have to steer the turn. Since lane changing and turning-in-front-of-other-drivers are the maneuvers that require looking behind, we arrange to do all lane changing and turning-in-front-of-other-drivers before we reach the intersection. Study Figure 7.

8.5.2 AS TRAFFIC APPROACHES AN INTERSECTION

1) Those drivers who want to turn left are at the left of their side of the road; that is, near the center of the roadway.

2) Those drivers who want to go straight are in the middle of their side of the roadway.

3) Those drivers who want to turn right are at the right-hand edge of the roadway.

THIS WAY, NO DRIVER HAS TO TURN IN FRONT OF ANOTHER DRIVER APPROACHING FROM BEHIND WHILE IN THE INTERSECTION.

NO DRIVER HAS TO LOOK BEHIND WHEN HE NEEDS TO BE LOOKING FORWARDS.

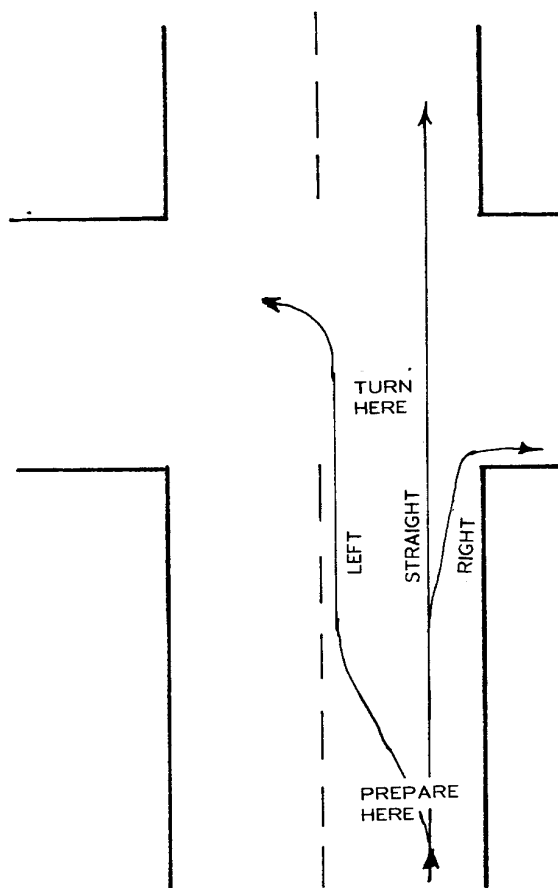


Fig 7: Intersection Positioning

8.5.3 RIGHT TURN

For all these turns study Figures 7, 8 & 9. Because you as a cyclist are often the furthest right of the moving traffic, right turns are easiest for you. However, there are still things to remember. If the road stays the same width, move straight up to the corner and turn right. If the roadway gets wider before the intersection, move right to follow its edge. Always remember that a motorist may also be turning right, so don't catch up to a slow motorist who may turn right and squeeze you against the curb.

8.5.4 STRAIGHT THROUGH

Straight-through is not always as easy as you would think because there are more choices for how to go straight through than for any other movement.

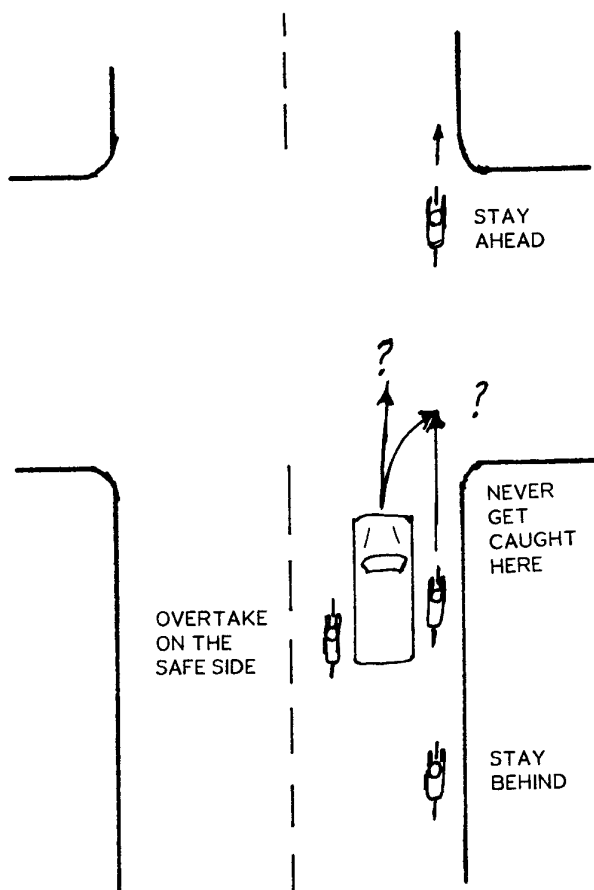


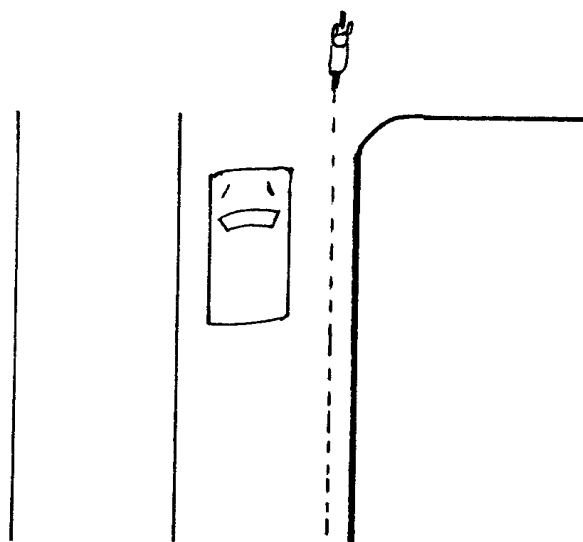
Fig 8: Never Ride into the Right-Hand Side of Traffic That Can Turn Right

Generally you go straight-through in a straight line. Start from the proper roadway position you were in before approaching the intersection, look past the intersection to where you should ride beyond it, and ride straight from one position to the other. Don't veer right just because there is extra room to your right; that makes motorists think that you are turning right, but then you surprise them by veering back into traffic again (for which you should look back, yield, and wait). Besides, this gets you mixed up with the right-turning cars, who are dangerous for straight-through cyclists. Study Figure 8

Right-turn-only lanes sometimes require an extra move. The easy kind is an additional lane to the right of the straight-through lane. With this kind, just keep going straight and stay out of the right-turn-only lane. The harder kind of right-turn-only lane is where the righthand lane becomes

right-turn-only. Then to go straight you must change lanes leftward to the first available straight-through lane.

The hardest straight-through situation is where the right-hand lane is right-or-straight and you don't know what the motorists are going to do. Study Figure 10. If the motorists are turning right, you want to be on their left, while if they are going straight you should be on their right. Study Figures 9 and 10.



WITH RARE RIGHT TURN TRAFFIC THIS IS A SINGLE MOVEMENT LANE

Fig 9: Right or Straight

You can either cross the lane to get on the left of right-turning cars, or you can slow down until the right-turning cars move out of your way. You have to look at the movements of the cars to decide what each driver intends to do, and position yourself accordingly. Whatever you think the driver ahead is going to do, never let yourself get on the right-hand side of a driver who might, or who can, turn right. Study Figure 10

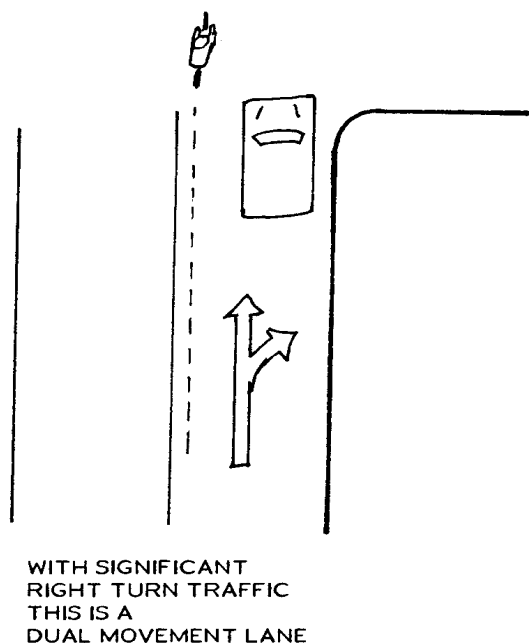


Fig 10: Right and Straight

8.5.5 LEFT TURN

Left turns are the most difficult, because you must cross the straightthrough traffic to join the left-turning traffic. However, it isn't puzzling because there is no question about what you must do. Study Figures 7 & 11

Long before you reach the intersection, start looking behind you to see the pattern of overtaking traffic. When you see a clear space, move left to the center of the road. Then ride next to the centerline up to the intersection.

At the intersection, yield to traffic coming from the opposite direction. When a gap appears, turn left.

8.5.6 BASIC INTERSECTION RULE

All of this moving into the proper position before reaching an intersection is done so that you never have to change lanes or cross other traffic while actually in an intersection. When you are in an intersection, particularly if you are turning, you must pay attention to traffic that is in front of you and in the path you will take. You cannot spare attention at that time for looking behind to see if it is safe to change lanes or cross in front of other traffic that is behind. Study Figures 13 and 14: Don't cross other traffic while in intersection.

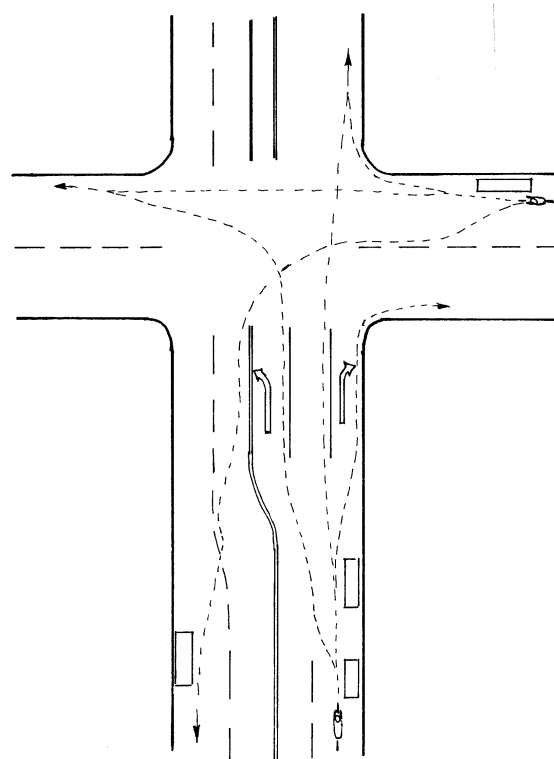


Fig 11: Cyclists' Paths Through Intersection

8.5.7 TEE INTERSECTIONS

When approaching a Tee intersection, all traffic will have to turn right or turn left. Therefore, you should position yourself early for whichever way you want to turn. Study Figure 12.

8.5.8 TURN LANES MULTIPLE TURN LANES CYCLISTS' LANE RULE

For multiple turn lanes study Figures 9, 10, 13, and 14. Intersections with many lanes often puzzle cyclists, but really there are only two simple rules about all the types of turn lane at intersections. Right-turn, straightthrough and left-turn lanes are designated either by arrows painted on the road surface or by arrow signs hung beside or over the roadway.

Whenever lanes are designated for specific movements, (right-turn, straight-through, or left-turn) you must use one of those lanes that are designated for your movement: generally you will use the rightmost lane that is designated for your movement. If that lane serves only one destination (like left-turn-only), ride on its right-hand side. study Figure 16. Whenever a lane serves two movements (right-or-straight, or straight-or-left)

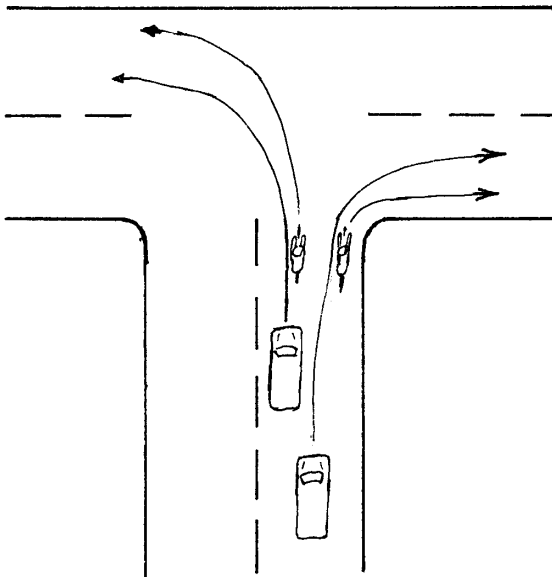


Fig 12: Cyclists' Paths at Tee Intersection

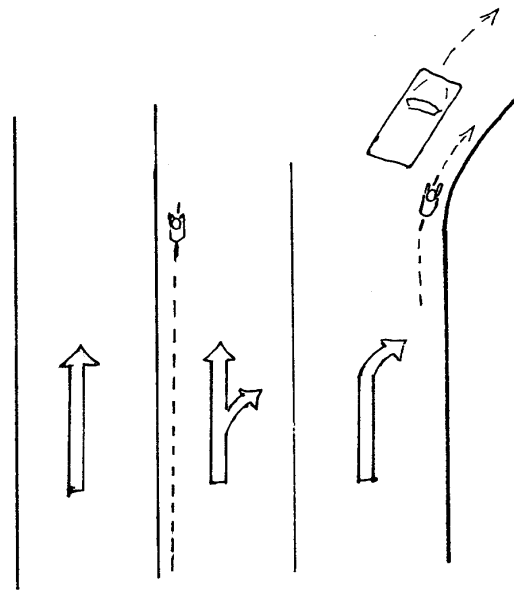


Fig 14: Cyclist Rides so he Does Not Cross In Front of Other Traffic while Inside Intersection

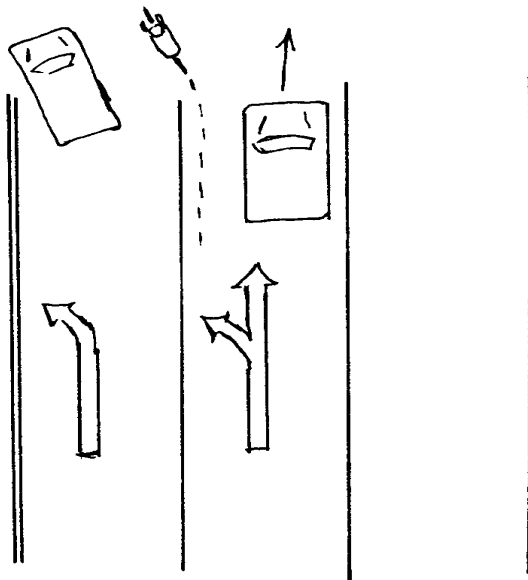


Fig 13: Cyclist Rides so he Does Not Cross In Front of Other Traffic while Inside Intersection

then ride on the side nearest to your movement.

Suppose that you want to turn left from a straight-or-left lane; you use its left side because left is left of straight. Study Figures 13 and 15.

Suppose that you want to go straight from a right-or-straight lane; you ride on its left side

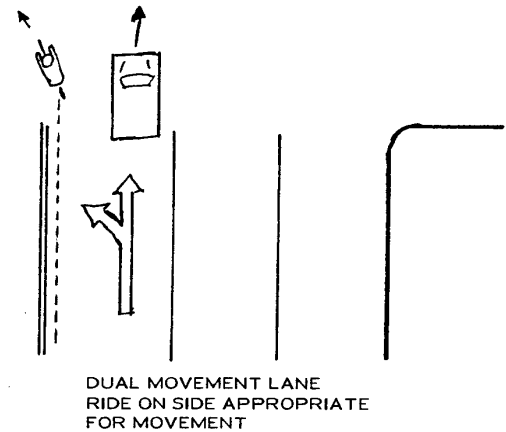
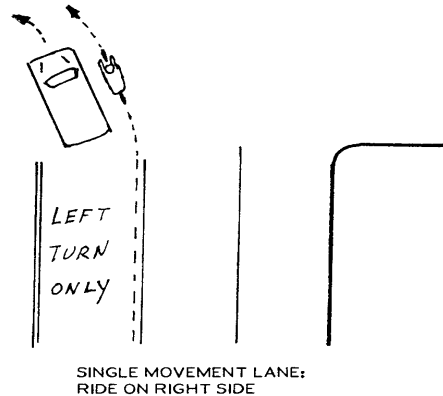


Fig 15: Dual Movement Lane: Ride on Side Appropriate for Movement because straight is left of right. Study Figure 14.

8.6 SPEED POSITIONING BETWEEN INTERSECTIONS

8.6.1 BASIC SPEED POSITIONING RULE

YOUR PROPER ROADWAY POSITION BETWEEN INTERSECTIONS IS CONTROLLED BY YOUR SPEED RELATIVE TO THE REST OF TRAFFIC. Parked traffic is at the curb line; slower traffic is near the curb; faster traffic is near the center of the road. That means that when cyclists are travelling slower than the motor traffic, which



**Fig 16: Single Movement Lane:
Ride on its Right Side**

is usually the case, they will ride with parked cars on their right and moving cars on their left. But don't squeeze between the parked cars and the moving cars, that's where you can run into a opened car door.

RIDE FAR ENOUGH AWAY FROM PARKED CARS SO YOU WON'T HIT A SUDDENLY-OPENED CAR DOOR. This is very important in shopping districts, where people frequently get in and out of cars, not so important in residential districts where doors may be opened only once a day. Don't worry about slowing down motorists; everybody has the right to operate safely, and you are operating properly by staying out of the "door zone." Study Figure 17.

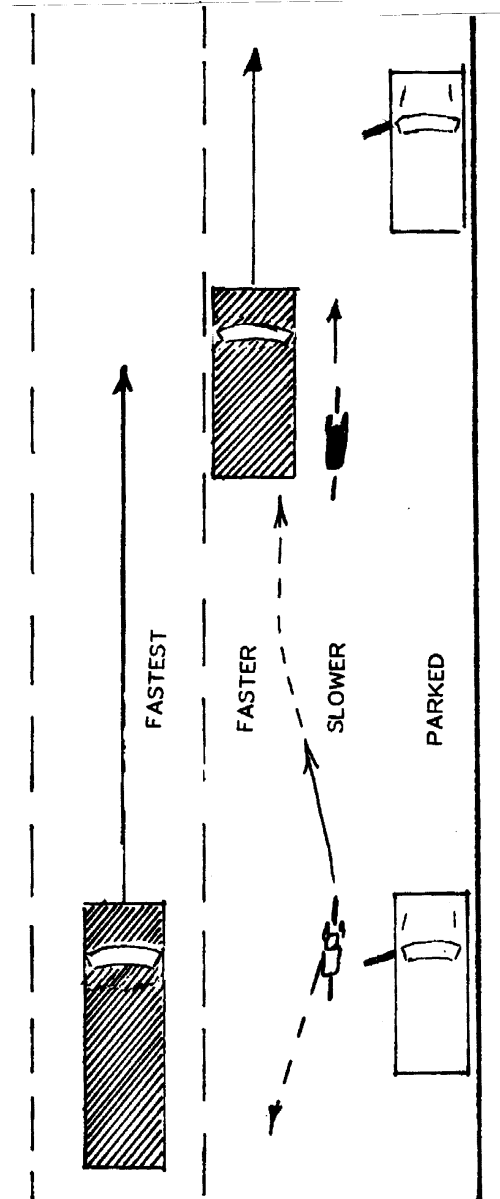
8.6.2 WIDE LANES, NARROW LANES

You should ride clear of possible open doors of parked cars, or, if there are no parked cars, to stay on the smooth part of the road surface. Don't ride further right because the edge of the road often has bad surfaces and conflicts with right-turning cars and cars coming out of stop signs.

Look at the cars as they pass you. If they pass you at a comfortable distance and stay within the lane you are both using, then keep straight on. This is called a wide lane, one you and a car can share side-by-side.

If the cars pass you uncomfortably close, or if they drive on or over the lane line when they pass you, this is a narrow lane, one you and a car cannot safely share side-by-side. Then it is better for you to ride in the middle of the lane, so that the cars must use the next lane over. Look behind,

see when it is safe to move over, and then move to the center of the lane. Study Figure 17.



**Fig 17: Proper Lane Positioning:
Stay out of the Door Zone
or Use a Full Lane**

8.6.3 OVERTAKING

When you catch up to a slow-moving car you must decide how to overtake it safely. The first rule is NEVER SQUEEZE BETWEEN A MOVING CAR AND THE CURB. The slower driver is often looking for a parking spot or a driveway, he doesn't expect a cyclist on his right, and he can't see you. He will turn right into you. In more complicated words, NEVER GET ON THE RIGHT-HAND SIDE OF A CAR THAT CAN OR MAY TURN RIGHT. Study Figure 18.

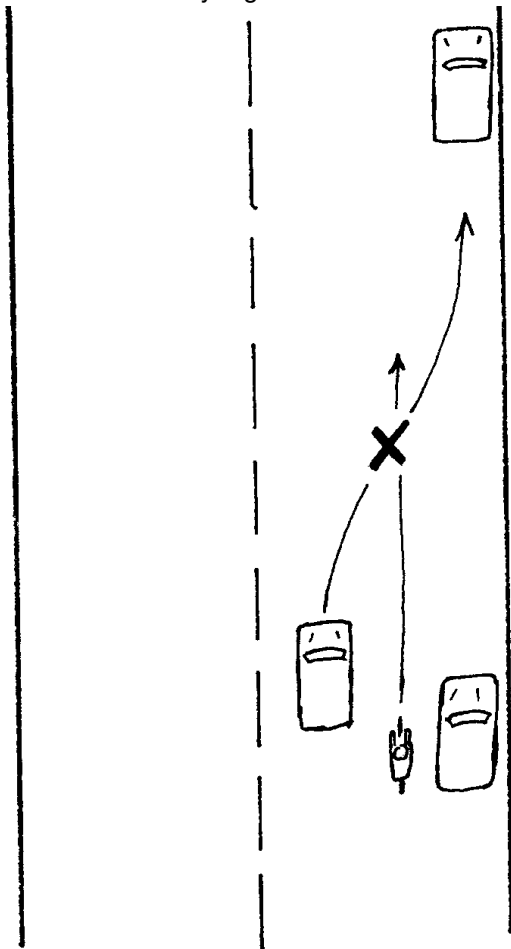


Fig 18: Never Overtake on Right-Hand Side of Traffic that Can Turn or Move Right

Similarly, never get on the left-hand side of a car that is turning left. However, it is easy to spot a driver who wants to turn left. He is stopped or moving slowly close to the centerline and often has his left-turn signal flashing. Study Figure 19

Also, a driver in the center lane of a multi-lane street must look behind and yield before moving to the right-hand lane. Therefore, it is safe to

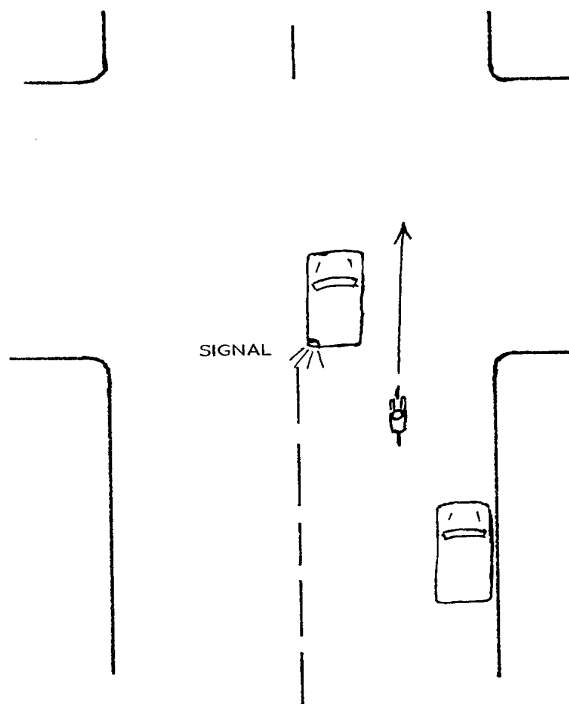


Fig 19: Overtake on the Left of Left-Turning Cars

overtake on the right-hand side of a car if there is a complete clear lane. Study Figure 20

Therefore, always overtake on the left-hand side of slower vehicles except when the slow vehicle is turning left or there is a complete clear lane on its right-hand side. When you want to overtake on the left-hand side, you must first look behind and yield to faster traffic. Study Figure 21

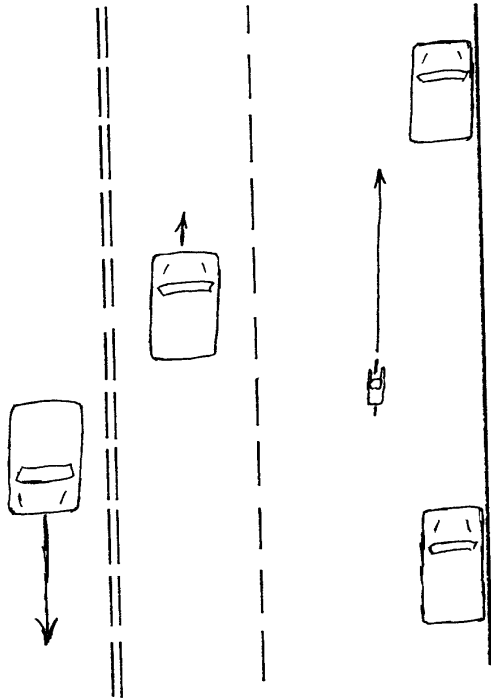


Fig 20: Safe to Overtake When You Have a Complete Clear Lane

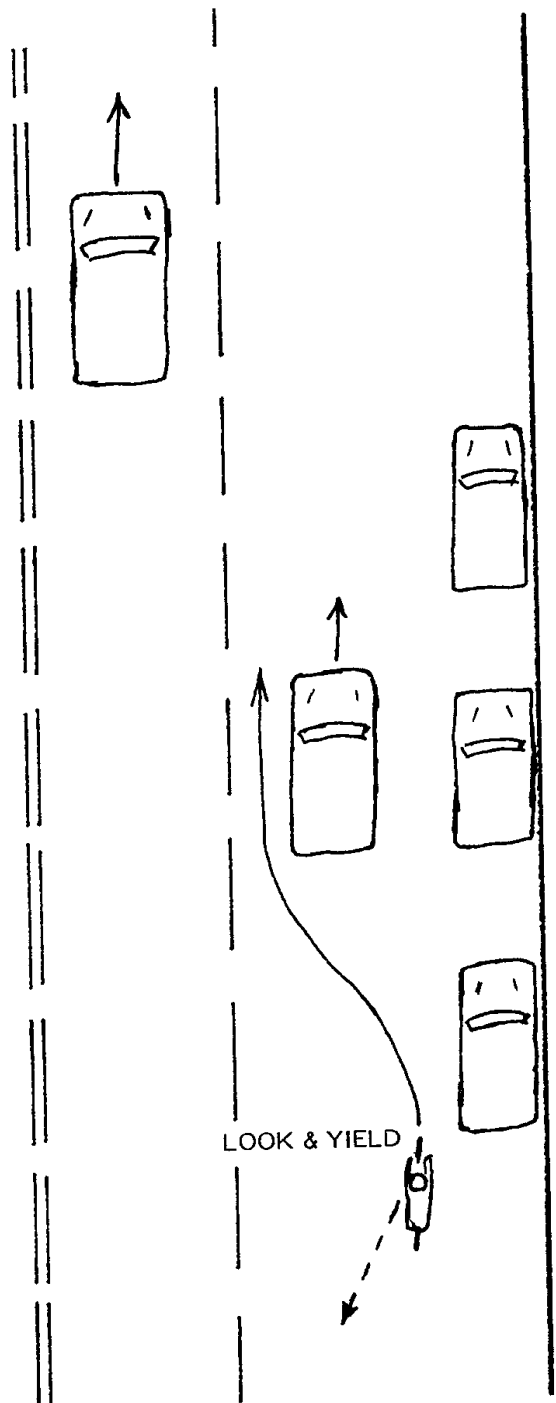


Fig 21: Proper Overtaking Procedure

8.7 THOUGHTS TO REMEMBER

8.7.1 THE BICYCLE IS A GOOD VEHICLE

If you have learned these lessons and learned how to perform these traffic maneuvers you have gone a long way towards learning how to ride safely and efficiently. Your bicycle is a good vehicle; it gives you the freedom to go where you want, when you want to go, without being dependent upon other people. Your bicycle-traffic skills and bicycle-handling skills enable you to use it well, and you will use these same skills when you drive a car. Yet if you enjoy cycling, there will always be a place for cycling in your life. It is the lifelong sport that is also useful.

8.7.2 WHERE TO LEARN MORE

There is still lots to learn about cycling; how to keep your bicycle running better; how to improve it; how to avoid the mistakes of other drivers; how to go faster, further, with less fatigue; how to get more enjoyment from rides with friends and cycling clubs; how to travel to distant places; even how to start racing if that appeals to you.

One way to learn while enjoying cycling is to ride with a cycling club. Ask your local bike shop or recreation department for the name and address of the local cycling club; write for its schedule and join a ride that is within your ability.

The best book which contains this information is *Effective Cycling*, by John Forester, published by The Massachusetts Institute of Technology Press.

8.7.3 ACT LIKE A DRIVER

Even if you do not consciously set out to learn more about cycling, experience will teach you some things. By observing the traffic pattern you will learn to better understand what other drivers want to do and to anticipate their movements. You will be able to move efficiently through traffic with little difficulty or annoyance. In all of this, **THE MOST IMPORTANT THING TO REMEMBER IS TO THINK AND ACT LIKE THE DRIVER OF A VEHICLE**, to learn how other drivers act and how to conform to the traffic pattern. **CYCLISTS FARE BEST WHEN THEY ACT AND ARE TREATED AS DRIVERS OF VEHICLES**. Make the traffic pattern work for you; don't think of yourself as a pedestrian on wheels who doesn't belong and must therefore fight against traffic. Then you'll be able to observe, understand, and avoid a collision

when someone else

9 THE EXAMINATION

9.1 WRITTEN EXAMINATION

Students in Grade 5 or above will have a written examination much like the other examinations that your teacher gives.

9.2 BICYCLE DRIVING TEST

All students will take the Bicycle Driving Test. In this test your teacher will divide the class into small groups and take each group on a ride like those you have already taken and over streets that you already know. With this small group your teacher will be able to see exactly how well you ride and he or she will write it down afterwards on the score sheet, like the ones shown on the next pages. Look at the scores on that sheet. Every time that the route takes a left turn you will earn 15 points, but if you make a mistake you will lose points. If you don't look, you will lose 10 points. If you don't end in the proper lane you will lose 5 points.

You won't be asked to do everything on the score sheet. These sheets are the same ones that are used for adult cyclists. Your teacher will test you on only those items that he or she has taught you because you will be tested on a ride just like those you have taken in class. But you can do the things that you have been taught just as well as an adult can; you just haven't been taught the most difficult things so we don't test you on them.

Your final score is the number of points you have left divided by how many you could have earned. Passing score is 60%, but most students earn scores between 85% and 95%. They do so well because riding a bicycle properly is easy after you have been properly taught. Once you understand how traffic works, riding properly is just common sense. You will do well.

10 FORESTER CYCLING PROFICIENCY SCORE SHEET

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Page 1 of 2

Group _____ #
 Cyclist # _____
 Name _____ Date _____
 Address _____ Testplace _____
 Examiner _____ Scorer _____

Total Possible _____ Total Lost _____
 Score (100(P - L)/P)

- TRAFFIC SIGNAL..... +5 _____
- Wrong Action -5 _____

- STOP SIGN +5 _____
- Too Fast -2 _____
- Not Looking..... -4 _____
- Not Yielding -5 _____

- EXIT DRIVEWAY +5 _____
- Too Fast -4 _____
- Not Looking..... -4 _____
- Not Yielding -4 _____

- RIGHT-TURN-ONLY LANE +10 _____
- Straight from RTOL..... -8 _____
- Swerving Out -8 _____

- INTERSECTION APPROACH +10 _____
- R-Side R-Turn Car -8 _____
- R-Side Moving Car -4 _____
- Too Far Right -4 _____
- Too Far Left..... -4 _____

- PARKED CAR..... +10 _____
- Swerving -8 _____
- Too Far Out -2 _____
- Too Close..... -4 _____

- No Return When Necessary -2 _____
- Return With Little Room..... -4 _____

- MERGE +15 _____
- Incorrect Path..... -8 _____
- Not Looking..... -8 _____
- Not Yielding..... -12 _____

- DIVERGE +15 _____
- Incorrect Path..... -8 _____
- Not Looking..... -8 _____
- Not Yielding..... -12 _____

- BEING OVERTAKEN +10 _____
- Too Far Left -8 _____
- Too Far Right..... -4 _____

- OVERTAKING +10 _____
- Swerving -4 _____
- No Look Before Swerve -8 _____
- Cutting Off Slow Driver..... -5 _____

- RIGHT TURN +5 _____
- Wrong Lane -2 _____
- Not Yielding..... -5 _____
- Not Looking Left..... -4 _____

- LEFT TURN +15 _____
- Wrong Starting Position -12 _____
- Not Looking..... -10 _____
- Not Yielding..... -15 _____
- No Stop When Ped Turns..... -15 _____
- Not Ending in Proper Lane..... -5 _____

- MULTIPLE LEFT TURN LANE..... +10 _____
- Incorrect Lane Choice -7 _____
- Incorrect Side of Lane -4 _____

- LANE CHANGING +15 _____
- Not Looking..... -8 _____
- Not Yielding..... -12 _____
- Too Many Lanes at Once -5 _____

- WIDE TO NARROW +5 _____
- Swerving -6 _____
- Not Looking, Not Yielding -4 _____

- RAILROAD TRACKS +15 _____
- Not Looking..... -12 _____
- Not Yielding..... -12 _____
- Not Perpendicular -8 _____

FORESTER CYCLING PROFICIENCY SCORE SHEET
Page 2 of 2

Group # _____ Cyclist # _____

OFF-ON ROADWAY +15 _____
 Bad Choice of Place -2 _____
 Too Fast Return -8 _____
 Not Looking..... -8 _____
 Not Yielding -8 _____
 Not Perpendicular -8 _____

GROUP RIDING +15 _____
 Overlapping Wheels -5 _____
 Too Far Behind..... -2 _____
 Not Indicating Rocks -2 _____
 Not Indicating Slow -5 _____
 Swerving -8 _____

POSTURE..... +5 _____
 Incorrect Saddle Height -2 _____
 Incorrect Foot Position -2 _____

PEDALLING +5 _____
 Slow Cadence..... -2 _____
 Stiff Ankling..... -2 _____

SHIFTING +5 _____
 Too Slow on Hills -2 _____
 Too Slow in Traffic..... -2 _____

PANIC STOP +20 _____
 Rear Wheel Skid -5 _____
 Lift Rear Wheel -15 _____
 Skid and Fall -15 _____

INSTANT TURN +20 _____
 Too Wide -5 _____
 Too Slow..... -10 _____

ROAD DEFECT +20 _____
 Incorrect Action -10 _____

WIND BLAST +20 _____
 Too Much Wobble -10 _____

AVOID CAR AT STOP SIGN +20 _____
 Incorrect Action -10 _____

AVOID CAR'S BAD MERGE +20 _____
 Incorrect Action -10 _____

AVOID CAR'S BAD RIGHT TURN +20 _____
 Incorrect Action -10 _____

AVOID CAR'S BAD LEFT TURN . +20 _____
 Incorrect Action -10 _____