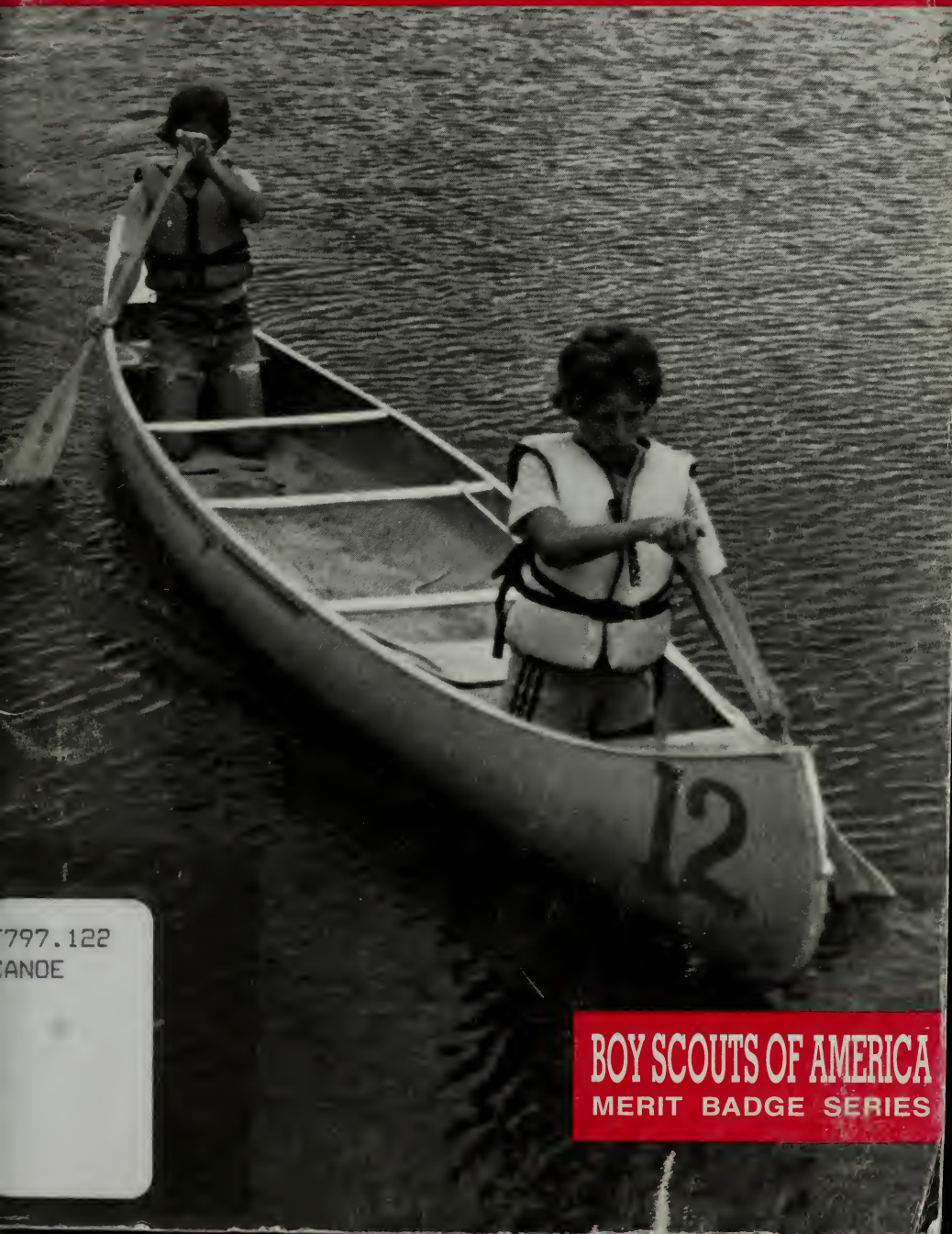




CANOEING

BOARD



797.122
CANOE

BOY SCOUTS OF AMERICA
MERIT BADGE SERIES

How to use this pamphlet.



The secret to successfully earning a merit badge is for you to use both the pamphlet and the suggestions of your counselor.

Your counselor can be as important to you as a coach is to an athlete. Use all of the resources your counselor can make available to you. This may be the best chance you will have to learn about this particular subject. Make it count.

If you or your counselor feels that any information in this pamphlet is incorrect, please let us know. Please state your source of information.

Merit badge pamphlets are reprinted annually and requirements updated regularly. Your suggestions for improvement are welcome.

Send comments along with a brief statement about yourself to Boy Scout Division • Boy Scouts of America • 1325 West Walnut Hill Lane, P.O. Box 152079, Irving, TX 75015-2079.

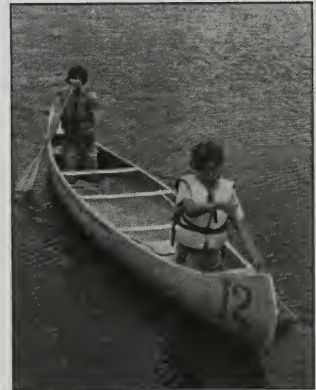
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CANOEING



BOY SCOUTS OF AMERICA
IRVING, TEXAS

1996 Printing of the
1989 Edition

Note to Counselors

Canoeing merit badge instruction should follow the requirements, procedures, and techniques presented in this pamphlet. The learning objectives should emphasize safety and basic skill proficiency. Every participant in canoeing instruction should fully understand and appreciate the limits of his ability and experience, and the distinction between flatwater and white-water skills. Canoeing merit badge counselors should complete Aquatics Instructor, BSA, training, or should be trained in teaching skills and techniques by a currently certified Aquatics Instructor, BSA.

Acknowledgments

The Boy Scouts of America has a long and proud canoeing tradition. Many of the safety precautions and teaching skills that are universally applied in canoeing today were developed by BSA's own pioneers in canoeing instruction and safety. The Boy Scouts of America gratefully acknowledges the contribution of these pioneers to canoeing and to this pamphlet: Fred C. Mills, W. Van B. Claussen, Dr. John B. May, and Ernest F. Schmidt.

This pamphlet was prepared for the Boy Scouts of America by K. Gregory Tucker, chairman, BSA national Aquatics Subcommittee, 1977-85; chairman, BSA Aquatics Workshop, 1977-83; chairman, national jamboree aquatics, 1981 and 1985; aquatics section director, BSA National Camping School, 1970-88; canoeing instructor, BSA National Camping School, 1966-69.

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Boy Scouts of America

Irving, Texas

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Requirements

1. Show that you know first aid for injuries or illnesses that could occur while canoeing, including hypothermia, heatstroke, heat exhaustion, dehydration, sunburn, insect stings, tick bites, blisters, and hyperventilation.
2. Do the following:
 - (a) Identify the conditions that must exist before performing CPR on a person. Explain how such conditions are recognized.
 - (b) Demonstrate proper technique for performing CPR on an adult mannequin for at least three minutes.
3. Before doing the following requirements, successfully complete the BSA swimmer test. Jump feetfirst into water over your head in depth, swim 75 yards or 75 meters in a strong manner using one or more of the following strokes: sidestroke, breaststroke, trudgen, or crawl; then swim 25 yards or 25 meters using an easy, resting backstroke. The 100 yards or 100 meters must be swum continuously and include at least one sharp turn. After completing the swim, rest by floating as motionless as possible.
4. Do the following:
 - (a) Name and point out the major parts of a canoe and paddle.
 - (b) Know canoeing terminology.
 - (c) Explain and demonstrate canoe kneeling and sitting positions and the proper use for each position.
 - (d) Review and discuss BSA Safety Afloat, and demonstrate the proper fit and use of personal flotation devices (PFDs).
 - (e) Demonstrate how to load and secure equipment in a canoe.
5. With a companion and using a properly equipped canoe:
 - (a) Properly carry, launch, and get into the bow of the canoe from dock or shore (both, if possible).

- (b) Paddle 100 yards on one side only in the bow position using a single-blade paddle. Turn underway and return to shore or dock showing proper form and use of the bow or power stroke, diagonal draw, and quarter sweep. Repeat while paddling on the other side.
 - (c) While paddling on one side only in the bow position, demonstrate how to hold water and stop. Show proper form and use of the push away, pullover, reverse sweep, and backwater. Repeat while paddling on the other side.
 - (d) Change places with your companion while canoe is afloat.
 - (e) Paddle 100 yards on one side only in the stern position. Turn underway and return to shore or dock while maintaining course and giving proper signals to your companion. Show proper form and use of the stern power stroke (the J stroke). Repeat while paddling on the other side.
 - (f) While paddling on one side only in the stern position, demonstrate how to hold water and stop. Show proper form and use of the push away, pullover, reverse sweep, and backstroke. Repeat while paddling on the other side.
 - (g) As bow paddler, make a proper landing and get out of the canoe while following directions from your companion. Repeat in the stern position giving directions to your companion.
 - (h) canoe properly.
6. While on deep water with a companion, fully dressed and wearing proper PFD:
- (a) Jump safely out of the canoe. Get back in without capsizing.
 - (b) Capsize the canoe, get back in, secure all loose gear, and paddle the swamped canoe 25 yards. Go overboard from the swamped canoe and swim, tow, or push the swamped canoe 50 feet.
 - (c) Empty the swamped canoe in shallow water.

7. Demonstrate solo canoe handling:
 - (a) Launch from shore or pier (both, if possible).
 - (b) Using a single-blade paddle and paddling only on one side, demonstrate proper form and use of the forward stroke (J stroke), forward and reverse sweeps, backwater, stop, pullover, push away, inside and outside pivots, and sculling. Repeat while paddling on the other side.
 - (c) While paddling on one side only, paddle a 50-yard course making at least one turn underway and one reverse of direction. Repeat while paddling on the other side.
 - (d) Make a proper landing at dock or shore (both, if possible). Store canoe properly (with assistance, if needed).
8. While alone in a canoe on deep water and wearing PFD, jump safely out of the canoe. Get back in without capsizing.
9. With a companion in your canoe and while giving instructions to persons who have capsized a canoe in deep water, empty the swamped canoe over your own canoe and assist the persons in reboarding the emptied canoe.
10. Discuss:
 - (a) General care and maintenance of canoeing equipment.
 - (b) How to rig a canoe for sailing.
 - (c) The differences between river (moving water) canoeing and lake (flatwater) canoeing.



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Introduction

Years before man traveled across our land by horse or wheel, American waterways knew the flash of paddles and the quiet glide of light watercraft. The American Indian gliding silently over still waters stalking game, the trapper steering his heavily loaded craft through a meandering water course, and the explorer tracking through uncharted waterways with his handwritten journals and crude map sketches were among the first to use the skills of flatwater canoeing.

For the American Indian and the early North American explorers and trappers, the need was always for lightness and portability, for boats that were capable of carrying and of being carried, for canoes that could easily follow the wilderness waterways of a whole continent. Certainly, the early American canoeist never crashed through standing waves, slalomed through jagged rocks, or rushed breathlessly down steep water courses. Such adventuring was not within the capability of their fragile craft.

Flatwater canoeing dates from our earliest history and played an important role in our proud heritage. In contrast, whitewater canoeing, as we know it today, is a modern era sport made possible by the development of strong, lightweight materials, beginning with the aluminum craft first mass-produced in the late 1940s.

The purpose of this pamphlet and the Canoeing merit badge is to help every Scout become a skilled flatwater paddler, able to maneuver a canoe effortlessly, safely, and confidently over waters like those paddled by the original American canoeists. When you have mastered the skills presented in this pamphlet, you will be able to glide silently to within a paddle length of wild game and water fowl, paddle and portage deep into wilderness areas inaccessible by road or trail, enjoy a quiet paddle in the moonlight or early morning mist, or show and test your skill on the water in canoeing games and pageantry. In addition, as a skilled and experienced flatwater paddler, you will be ready to learn whitewater skills, knowing that flatwater canoeing and running a wild river are vastly different activities requiring different skills. When you have demonstrated your knowledge and skill as a safe flatwater canoeist, you will be ready for your next challenge—the Whitewater merit badge.

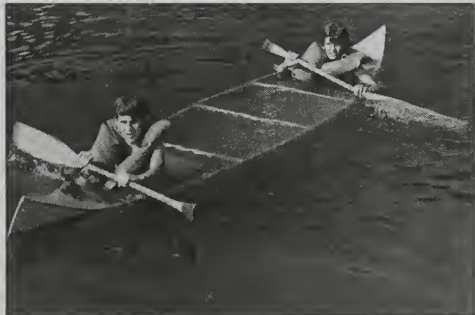
Swimming Skill and Safety

Swimmer Test

The BSA swimmer test demonstrates the minimum level of swimming ability required for safe deep-water swimming, a necessary part of safe open-water canoeing. The various parts of the test evaluate the several different skills needed for this minimum level of swimming ability.

First, the swimmer must be able to make an abrupt entry into deep water and begin swimming without any aids. Walking in from shallow water, easing in from the edge or down a ladder, pushing off from side or bottom, or gaining forward momentum by diving do not satisfy this requirement. After entering the water and beginning to swim, the swimmer must be able to cover distance with a strong confident stroke. The 75 yards should not be the outer limit of the swimmer's ability, but swimming this distance should show that he has enough stamina to avoid undue risk. Dog paddling and strokes that are repeatedly interrupted and restarted are not sufficient; underwater swimming is not acceptable. Either one or several of the itemized strokes may be used to complete the requirement. Any strong sidestroke or breaststroke, or any strong overarm stroke (including the back crawl) are acceptable.

After completing the distance requirement, the swimmer must show his ability to do a restful, free-breathing backstroke that can be used to avoid exhaustion during swimming activity. This part of the test must follow the



A good canoeist must develop confidence and ability in and out of the canoe.

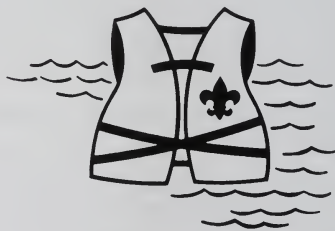
more strenuous swimming activity to show that the swimmer is able to use the backstroke for resting. The change of stroke must be accomplished in deep water without any push off or other assistance. Any variation of the elementary backstroke is acceptable, if it is restful. An overarm backcrawl may be acceptable, if it clearly provides an opportunity for the swimmer to rest and regain his wind.

The total 100 yards or 100 meters is to be covered without rest stops. The sharp turn is included in the requirements to demonstrate the swimmer's ability to reverse direction in deep water without assistance, and without pushing off from side or bottom.

The floating part of the test is important because it demonstrates the swimmer's ability to maintain himself in the water indefinitely, even though he may be exhausted or otherwise unable to swim. Treading water or swimming in place will further tire the swimmer and are, therefore, unacceptable. The duration of the float test is not significant, but it must be long enough to demonstrate that the swimmer is in fact resting and could likely continue to do so for a prolonged period. Drownproofing may be sufficient if it is clearly restful, but floating face up is preferred.

Safety Afloat

The BSA Safety Afloat standards were developed to promote boating and boating safety and to set standards for safe unit activity afloat. They apply to all canoeing activity. Every Scout canoeist should study and understand the nine points of the BSA Safety Afloat plan.



Qualified Supervision

A responsible adult must supervise all activity afloat and must be experienced and qualified in water safety (BSA Lifeguard, Red Cross Advanced Lifesaving, or YMCA Senior Lifesavers) and in the particular skills related to the water craft being used, or use assistants so qualified. The ability to meet current requirements for the Canoeing, Rowing, Small-boat Sailing, or Motorboating merit badge qualifies a person for safe handling of that water craft. One adult supervisor is required for each 10 people, with a minimum of two adults for any one group. All adult supervisors must complete Safety Afloat and Safe Swim Defense training, and at least one must be certified in CPR basic life support.

Physical Fitness

All persons must present evidence of fitness with a complete health history from a physician, parent, or legal guardian. The adult supervisor should adjust all supervision, discipline, and protection to anticipate any potential risks associated with individual health conditions. In the event of any significant health condition, proof of an examination by a physician should be required by the adult leader.

Swimming Ability

A person who has not been classified as a swimmer may ride as a passenger in a rowboat or motorboat with an adult swimmer, or in a canoe, raft, or sailboat with an adult certified as a lifeguard or a lifesaver by a recognized agency. In all other circumstances, the person must be a swimmer to participate in unit activity afloat. To be classified as a swimmer, a person must pass a test as follows:

Jump feetfirst into water over the head in depth, level off, and begin swimming. Swim 75 yards or 75 meters in a strong manner, using one or more of the following strokes: sidestroke, breaststroke, trudgen or crawl; then swim 25 yards or 25 meters using a resting backstroke. The 100 yards or 100 meters must be swum continuously and include at least one sharp turn. After completing the swim, rest by floating.

Personal Flotation Equipment

U. S. Coast Guard-approved Type II or III personal flotation devices (PFDs) must be worn by all persons engaged in activity on the open water (rowing, canoeing, sailing, boardsailing, motorboating, waterskiing, rafting, tubing, kayaking, and surfboarding).

Buddy System

All activity afloat must adhere to the principles of the buddy system. The buddy system assures that every person involved in aquatics activity will have at least one other person constantly aware of his or her situation and prepared to lend assistance immediately when needed. Not only does every individual have a buddy, but every craft should have a “buddy boat” when the craft are on the water.

Skill Proficiency

All persons participating in unit activity afloat on the open water must be trained and practiced in craft-handling skills, safety, and emergency procedures.

All persons planning to participate in unit activity on whitewater must complete special training conducted by an Aquatics Instructor, BSA, or qualified equivalent.

Powerboat operators must complete state certification and be able to meet requirements for the Motorboating merit badge or equivalent (American Red Cross, U. S. Coast Guard, U. S. Coast Guard Auxiliary, or U. S. Power Squadron). With the exception of whitewater and powerboat operation, as noted above, a minimum of 3 hours of training and supervised practice, or meeting the requirements for “basic handling tests”, is required for all unpowered craft.

Planning

- **Float Plan.** Know exactly where the unit will put in, where the unit will pull out, and precisely what course will be followed. All stopover points should be determined in advance. Travel time should be estimated with ample margins to avoid traveling under time pressures. Accurate and current maps and information on the waterway to be traveled should be obtained, and the course should be discussed with others who have made the trip under similar seasonal conditions. (Preferably, an adult member of the group should run the course prior to the unit trip.)
- **Local Rules.** Determine what state and local laws or regulations are applicable. If private property is to be used or crossed, obtain written permission from the owners. All such rules must be strictly observed.
- **Notification.** The float plan must be filed with the parents of participants and a member of the unit committee. For any activity using canoes on running water, the float plan must also be filed with the local council office. When the unit has returned from this activity, persons receiving the float plan should be notified. Appropriate authorities, such as Coast Guard, state police, or park personnel, should be notified when their jurisdiction is involved.
- **Weather.** Check the weather forecast just before setting out; know and understand the seasonal weather pattern for the region; and keep an eye out for weather changes. The threat of rough weather should bring you ashore immediately.
- **Contingencies.** You need to plan for possible emergencies or other circumstances that could force a change in the original plan. All such circumstances should be identified and considered in advance so that appropriate contingency plans can be developed.

Equipment

All equipment must be suited to the craft, to the water conditions, and to the individual; must be in good repair; and must satisfy all state and U. S. Coast Guard requirements. Whenever possible, spare equipment should be carried. On long trips, or when spare equipment is not available, repair materials must be carried. Appropriate rescue equipment must be available for immediate use.

Discipline

All participants should know, understand, and respect the rules and procedures for safe unit activity afloat. When Scouts know and understand the reasons for the rules, they will observe them. When fairly and impartially applied, rules do not interfere with the fun—rules for safety, plus common sense and good judgment, keep the fun from being interrupted by tragedy.

Note: For cruising vessels (excluding rowboats, canoes, kayaks, and rafts, but including sailboats and powerboats longer than 20 feet) used in adult-supervised unit activities by a chartered Explorer post or ship specializing in watercraft operations, the standards and procedures in the *Sea Explorer Manual*, No. 3229, may be substituted for Safety Afloat standards.

Personal Flotation Devices

BSA policy requires that U. S. Coast Guard-approved flotation devices (PFDs) be properly worn by all persons engaged in activity on the open water. Canoeing is certainly no exception. Before you even approach the canoe, you should learn about the different types of PFDs and their uses, how to put on a PFD, and how to check it for proper fit.

The U. S. Coast Guard has identified five different types of PFDs:

Type I—an approved device designed to turn an *unconscious* person in the water from a facedown position to a vertical or slightly backward position, and to have more than 20 pounds of buoyancy. The device will maintain a vertical or slightly backward position and therefore greatly increase chances for survival. This is the most effective PFD in rough water.

Type II—an approved device designed to turn an *unconscious* person in the water from a facedown position to a vertical or slightly backward position, provided there is some movement of the water. These must have a minimum

of 15½ pounds of buoyancy. They are recommended for closer, inshore cruising, are acceptable for all size boats, and must be in good and serviceable condition and readily accessible.

Type III—an approved device designed to keep a *conscious* person in a vertical and slightly backward position; these have at least 15½ pounds of buoyancy. While these have the same buoyancy as Type II, the Type III has lesser turning ability. This makes it a comfortable design for water activities such as canoeing. Recommended for in-water sports and close inshore operation on lakes and ponds. Acceptable for all size boats. Must be in good serviceable condition and readily accessible.

Type IV—an approved device designed to be *thrown to a person in the water, but not worn*. It is designed to have at least 16½ pounds of buoyancy. Acceptable for boats less than 16 feet long, canoes, and kayaks, and as a throwable device for boats 16 feet and longer. Must be in good serviceable condition and immediately available. Buoyant cushions and ring buoys are typical of this type of PFD.

Type V—special-purpose PFDs that carry some restrictions. Be sure to read the label.

Types II and III are acceptable for most Scouting aquatics, and Type III is appropriate for flatwater canoeing. A zip-up, belted, plastic cell-filled Type III PFD vest is comfortable to wear, it does not interfere with paddling or swimming, and it provides some padding on the shoulders when portaging. Every skill and maneuver discussed in this pamphlet can and must be done while wearing the PFD.

A typical Type III PFD vest should be worn with the label on the inside. Belt straps should be adjusted so that they fit snugly at or just above the waist, in the loops provided. A second buckle or tie strap must be used just below the collar line, unless there is a strong zipper that will secure the top front of the PFD.

Proper care and storage of PFDs are essential. All PFDs should be dried off the ground and under cover. Direct sun drying will cause the fabric to fade and wear out quickly. Buckles must be maintained and repaired as needed. All labels should be readable. If the flotation material or fabric is damaged, the PFD should be thrown away and replaced. Remember that PFDs are not to be used as seat cushions or kneeling pads.

Equipment

Canoes

There was a time when all canoes were made of natural materials. Today's aluminum, fiberglass, and plastic canoes are descendants of the birchbark, animal skin, reed, and dugout craft of the early Americans. About 1870, men found that canvas stretched over a wooden shell made a light, strong, and beautiful canoe, and for 8 decades the canvas canoe was king. After World War II, canoes made of aluminum captured much of the market. Quality canoes are now made from a variety of synthetic materials.

Even though canoes today are made of different materials and in different styles and models, the names of the parts on all canoes are fairly standard. Canoeing terms are derived from the larger ships of the ocean. For example, *starboard* and *port* mean the right and left side of the canoe or boat. (These terms have a lot of history, and have changed over time. The port side used to be called *larboard*. The larboard side was always against the dock when the ship was in port, and over time the shorter word became the preferred term.) When you are facing forward in your canoe, port is on your left and starboard is on your right. The terms "right" and "left" are, of course, just as good.

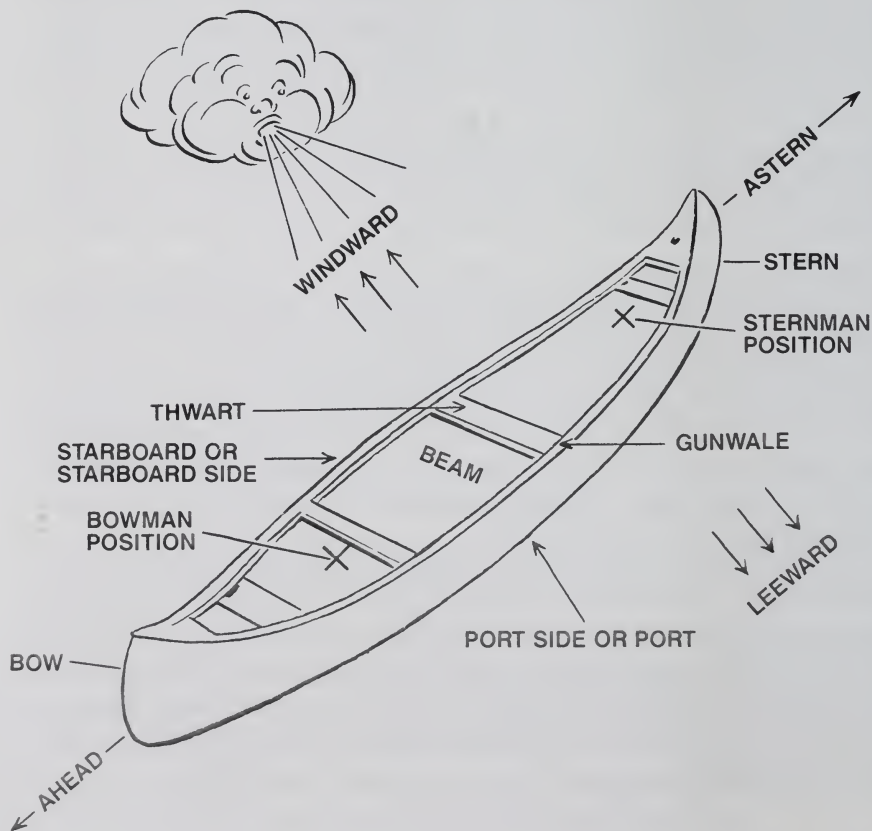
For moving about or placing gear in the canoe, *forward* means towards the front end and *aft* means towards the back. *Amidships* is the center, and *bow* and *stern* name the front and back of the canoe.

Sides and *bottom* are obvious, and *keel* is the reinforcing fin that runs along the bottom of the canoe. *Ribs* and *planking* (in a canvas canoe) reinforce the wall of the canoe. *Gunwale* (pronounced "gunnel") is the top edge or outside rim of the canoe. *Thwarts* (pronounced "thorts") are the braces that reach across the top of the canoe.

For lake canoeing, certain features of the canoe should be considered. The bow and stern should be low to offer less surface to the wind. A small keel will lessen sideways drift. A rounded bottom will increase speed, but this is also less stable. Good lines are important, but only actual testing against other canoes will determine which is the best for your purpose. Look for a fine bow and stern to cut easily through the waves, but with some flare to push water away.

It is important to know the number of pounds of cargo and people that a canoe can safely carry. This information is usually provided by the manufacturer. If you wonder whether your canoe is overloaded, check the *freeboard*. If there are less than 6 inches between the surface of the water and the lowest point on your canoe's gunwales, your canoe is not safe for paddling. The U. S. Coast Guard measures capacity by loading the canoe until it has 6 inches of freeboard. The sides should be high enough to keep waves out. The depth of the canoe, from center thwart to bottom, should be 12 inches or more for all canoes except the smallest 12-footers. Freight canoes may be 2 feet deep or more.

Most lake or flatwater canoes are 16 to 18 feet in length. Depending on lake and wind conditions, a flatwater canoe could be as short as 12 feet or as long as 36 feet. The big Montreal canoes that fur traders used on the Great Lakes were 35 feet long—and made of birchbark!



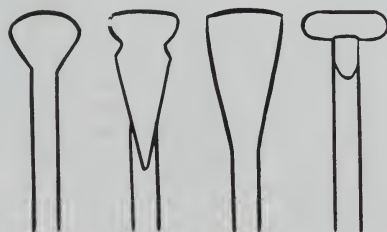
Paddles

Paddles can be made of wood, fiberglass, metal, plastic, or a combination of these materials. Wood was the original material, and many feel that it is still the best, but good wooden paddles are becoming hard to find. A flatwater paddle is usually slightly flexible, although some canoeists prefer rigid paddles.

Paddle length depends on how long you and your arms are. If your paddle reaches between your outstretched arms with the grip in the palm of one hand and the tip in the other, then it is about right. Another way to judge the correct paddle length is to put the tip of the paddle on your toe. The grip should reach up to about your nose. The important thing is that the paddle feels comfortable to you, and the entire blade is in the water at the lowest point of your most comfortable power stroke. If your hand on the throat of the paddle is dipping into the water on each stroke, the paddle may be too long. The weight of the paddle is also a matter of preference, but remember that you're going to be swinging it about 20 times a minute. A strong, light-weight paddle will probably take you farther and longer.

Paddle blade width varies from 5 to 8 inches. The average paddle blade is about 5 inches wide. Wider blades are used for racing because they provide more power. For typical flatwater canoeing, a 6-inch blade is about right.

The paddle grip should fit your hand smoothly and comfortably. There are a variety of paddle grips available. Choose the one that you find most comfortable. On wooden paddles, the grip can be sanded or whittled to individual preference. Most importantly, the grip should be smooth so as not to scratch or blister the palm during prolonged use. A wooden paddle grip should be sanded periodically to keep it smooth.



TYPES OF GRIPS



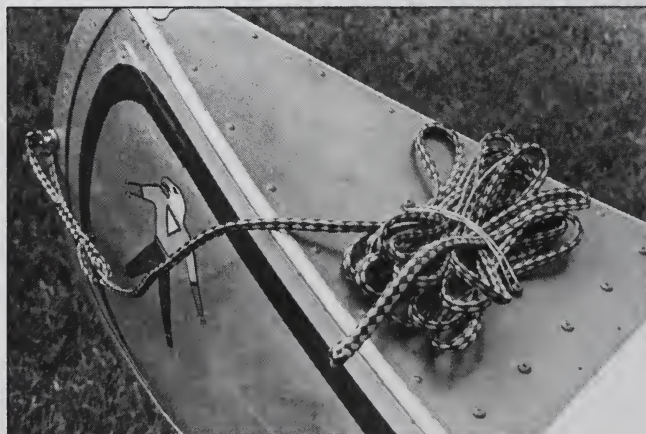
PARTS OF A PADDLE

Paddle styles take their names from the colorful vocabulary of our ancestral canoeists.

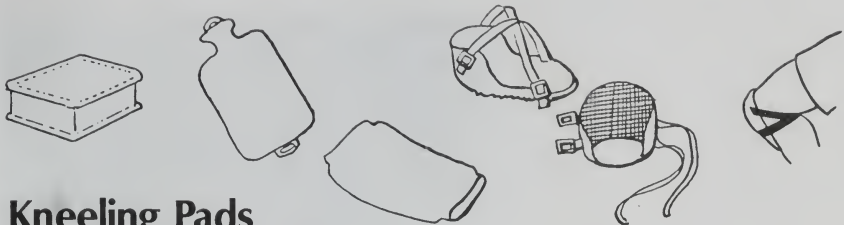
- **Trader.** Large blade surface, squarish end.
- **Voyageur.** Smaller blade area and longer shaft than the trader.
- **Beavertail.** Usually made of soft, light wood. Recommended for all-purpose paddling. The blade is shorter, with a rounded tip, and is normally lighter and easier to use.
- **Racing.** As the name indicates, this paddle is used in racing where long, powerful strokes are required. Because of its wide blade and square tip, it bites solidly into the water.
- **Indian.** Has a long, narrow blade and no top grip. The Indian canoeists apparently preferred a short, steady stroke with a paddle that did not move much water, but conserved energy. A good model to make at camp or in the workshop.

Painters

Painter is the nautical name for the lines secured to the bow and stern of the canoe. These lines have many uses for securing the craft at a dock or shoreline, or for towing. The painter should be long enough on each end to tie back to the nearest thwart with a clove hitch. They can also be coiled and secured to the top portion of the breastplate. They should never be left loose in the bottom of the canoe where the paddler could become entangled.



Secure your canoe painter to the deck with a strong elastic band.



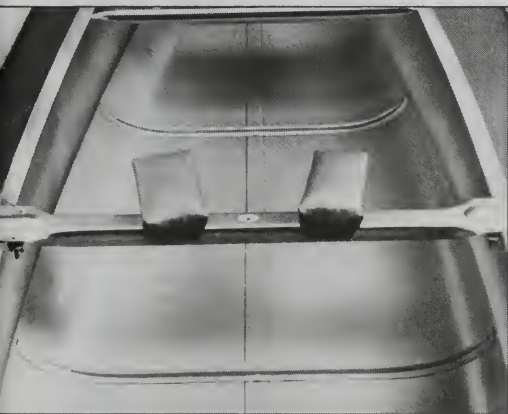
Kneeling Pads

Kneeling pads should be used when paddling in the kneeling position. Pads can rest in the bottom of the canoe or can be secured to the paddler's legs. Several types of kneeling pads are available from gardening and sports shops. You can also make your own from cloth, styrofoam, or other materials.

Kneeling pads should not slip on the bottom of the canoe, should not soak up water, and should float. To make your own kneepads, put two layers of sponge rubber in a piece of tire tube, turned inside out. Seal the edges with a rubber cement or have them vulcanized at a tire store. Cover it with cloth, since rubber against bare skin can chafe and cause blisters. Or, fill an old hot-water bottle with sawdust, then wrap it in cloth. If you are fastening a pad to each knee, make sure you can unfasten it easily and quickly.

Yokes

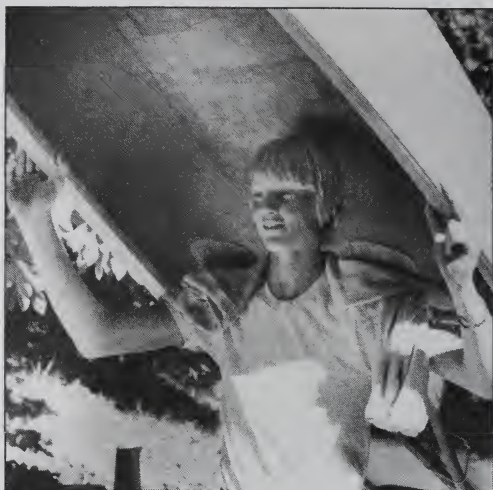
When you pick up the canoe and carry it over land from one lake or stream to another, you are *portaging*. The trail you follow is the *portage*. Canoe yokes come in handy when you are carrying the canoe on your shoulders. A number of padded yokes are available and will fit a standard canoe. You can also improvise yokes using canoe paddles.



Canoe-carrying yokes can be purchased from canoe suppliers.



Improved yokes can be made by using canoe paddles.

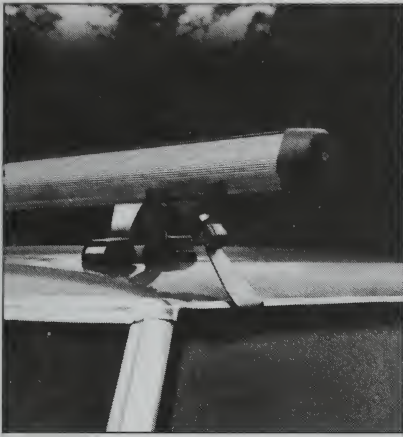


Secure your paddles to your canoe for portaging supports.

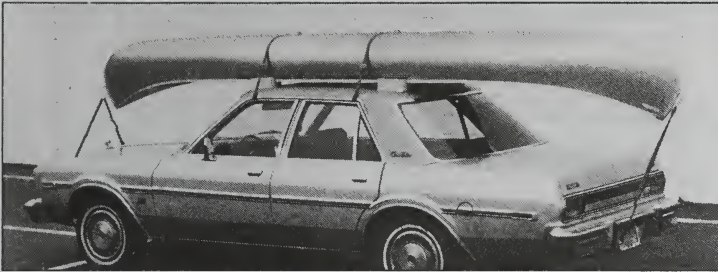
Carriers

Car-top carriers or roof racks are handy devices for carrying your canoe or boat on a car or truck. The simplest ones are blocks of plastic or foam that fit between the canoe and the roof of the car.

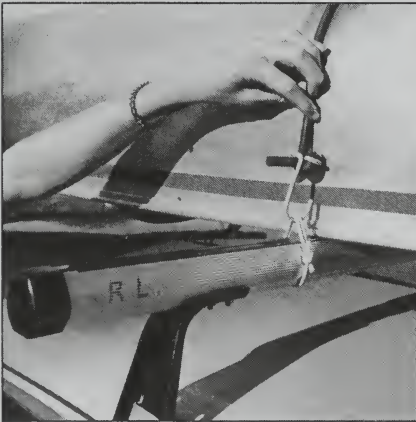
Always double-secure the canoe to the car with strong bow and stern ropes. Some auto stores and garages sell strong rubber cords with steel hooks for "tie-downs." They make excellent canoe-securing devices.



Use cartop carriers with durable racks that lock securely to the cartop.

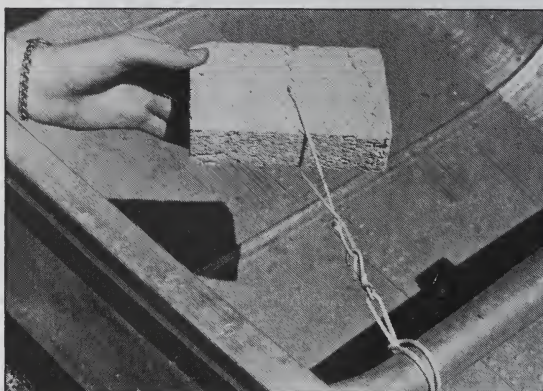
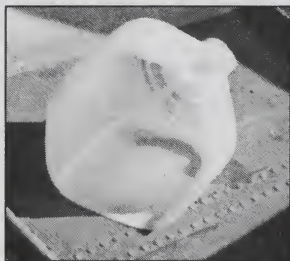


A canoe secured at each end and double-strapped to the car top will ride safely on four styrofoam blocks.



Use steel hooks on rubber cords to tie down the canoe.

Cut open a bleach bottle to make a bailer.



Use a large sponge to bail out your canoe.

Bailers

No matter how careful or skilled you are, some water will get into your canoe. You may take in water from the waves on a lake as a result of “out and in” maneuvers, or just from your feet as you wade out into the lake to launch your canoe. The best way to get that water back where it belongs is to use a large sponge, a plastic jug (like a bleach bottle cut open), or a cup—or even, in an emergency, a shoe! Never let the water build up in your canoe, since shifting water can throw off your canoe’s balance and trim, and make paddling very “tippy.”

Waterproof Containers

Containers to protect equipment from water damage will always be needed for your camera, camping gear, food, or clothing, particularly on a long trip. Use simple plastic bags (like garbage can liners), plastic freezer boxes, special rubber bags, or, for very special equipment like cameras, metal ammunition boxes. Some waterproof plastic containers are sold by outfitters and other stores specifically for this purpose. Remember to tie those valuable packages to the canoe.



Shoes

Proper footgear is important in canoeing. Although shoes are not usually needed in the canoe if the weather is warm, shoes are needed for protection when launching and landing, and when carrying the canoe to and from the water. Shallow water may hide a rough or unknown bottom with natural or man-made hazards. These hazards cannot be avoided by trying to stay dry. Canoeing is not a “dry foot” sport. The paddler determined to keep his feet dry usually gets his hair wet! Good canoeing shoes should have a non-slip tread, dry quickly, and stay secure on the foot. Some lace-up shoes with canvas tops and rubber soles work fine, but drying and comfort may be a problem. Secure-fitting sandals that do not lose their shape and fit when wet, and with good soles, are ideal. Some outfitters and sports shops carry durable plastic sandals designed specifically for canoeing.



Canoeing sandals

Loading the Canoe

The stability and handling of lightweight, shallow-draft craft such as canoes are affected by weight and weight distribution. If your canoe is trim, you run less risk of overturning and will be able to maneuver more easily.

A canoe is *trim* if it is balanced from end to end and side to side. If the canoe is trim, the center of gravity is over the keel. The center of gravity should also be below the gunwales and as near the bottom as possible.

Weight that lowers the center of gravity of the craft and adds stability is called *ballast*. A properly loaded canoe is trim with the gear serving as ballast. But too much weight can be a problem in wind and waves, or if the canoe *lists* (leans sideways) as a result of collision or movement in the canoe. Total cargo, including gear and people, should never leave less than 6 inches of freeboard (distance between the surface of the water and the gunwale amidships).

When packing your canoe, tie small items and loose gear such as shoes, camera, and fishing tackle to the canoe. Secure larger items like tenting, bedrolls, and food packs to prevent shifting.

Assuming that your canoe is trim before boarding, the heavier member of the paddling team should be in the stern. An exception to this rule may occur when paddling on a windy day. The heavier end of the canoe should be turned into the wind. If you are heading into the wind, then the bow should be slightly heavier than the stern. The wind will always tend to turn the heavier end of the canoe into the wind. This is called the *weather vane effect*.

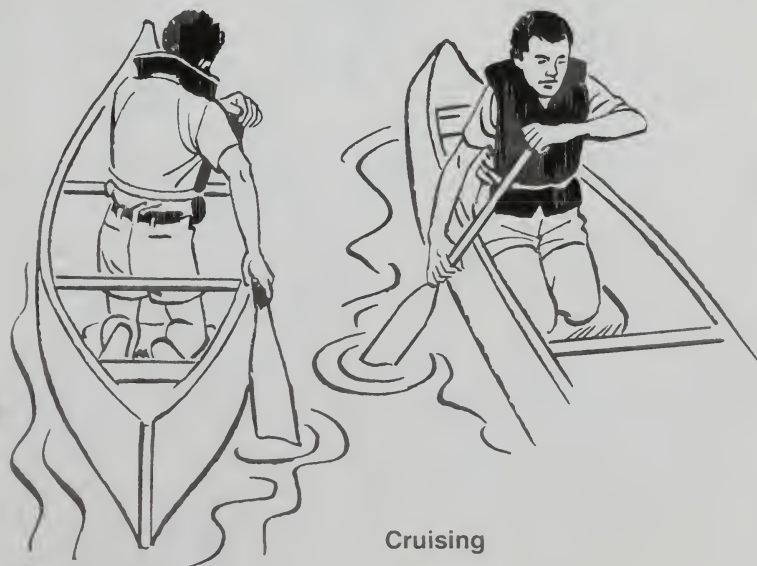
Paddling Positions

The paddling positions favored by skilled canoeists not only increase stability by lowering the center of gravity, but also permit the paddler to use his thigh and trunk strength more efficiently in conjunction with his arms.

Most canoes today have bow and stern seats. Seats add some comfort for the inexperienced paddler, or on long treks, but they also raise the center of gravity and reduce stability. Paddling from the seat is acceptable on quiet waters, but on windy or rough water—or when racing or doing complicated maneuvers—only the novice would fail to use a kneeling position. Also, when the canoe is heavily loaded and has minimum freeboard, paddlers should always kneel.

It is easier to paddle from a kneeling position, since you can use your thigh and trunk muscles along with your arm and shoulder muscles. You can get a wider reach and a more powerful stroke, too. On a seat, only the arm and shoulder muscles are used—and they can get tired and sore fast. In a kneeling position, you and your canoe become almost one. You can better “feel” every move your canoe makes.

Kneeling positions are the same whether you are paddling alone, with a buddy, in the bow, or in the stern. The position used most often for recreational canoeing is the *cruising position*. You kneel on both knees and rest your buttocks against a thwart or the forward edge of a seat. A variation of the cruising position is kneeling on one knee, often called the *relief posi-*



tion because it is frequently alternated with the normal cruising position. The paddler rests against a thwart or a seat while kneeling on one knee and extending the other leg forward. He should brace the forward foot by placing it against the edge of a rib. Always kneel on the knee that is on the paddling side.

The *upright kneeling position* is one in which the paddler kneels on both knees, with thighs and trunk erect, and faces slightly toward his paddling side. This position has the distinct advantage of allowing the paddler to change his location in the canoe, regardless of thwart or seat location. It's a good relief from other positions, makes paddling easier if there is wind, and allows a more powerful stroke.

The *high kneeling or racing position* is used in canoe racing or for covering distance in the shortest time with the least effort. The position is essentially on one knee and the opposite foot, with the body erect and facing slightly toward the paddling side, rather than directly forward. The leg on the kneeling side extends diagonally across the canoe with the bottom surface of the paddler's toes, or the bottom of the toe of a soft-soled shoe, gripping the bottom of the canoe. The other leg is extended forward with only a slight bend at the knee. The foot is placed firmly on the bottom of the canoe, and the toes are pointed diagonally toward the center of the craft.

One other kneeling position is called *Indian style* or "sitting on the heels." It is not very practical for a small paddler in a high-walled aluminum canoe, but was probably ideal for the shallow dugout or bark canoe. The paddler kneels on the bottom of the canoe and sits back on the inside of his heels.



Cruising one knee



Upright kneeling



This puts weight right on the bottom of the canoe, gives the paddler maximum control, and virtually makes him part of his craft. It is a very good position for single paddling, but the beginner will find it hard on his knees and ankles until he gets used to it. It should be used for short periods with a firm kneeling pad until you have become accustomed to paddling Indian style.

High kneeling racing



TOE OF SHOE
GRIPS BOTTOM.

KNEELING LEG EXTENDS DIAGONALLY
ACROSS CANOE.

Tandem Canoeing

Tandem canoeing is what you do with a companion—one person in the bow, one person in the stern. Although other people may be carried as passengers, the paddling is done by the bowman and the sternman. You should master the paddling skills of each position in tandem before attempting to learn the single man paddling skills.

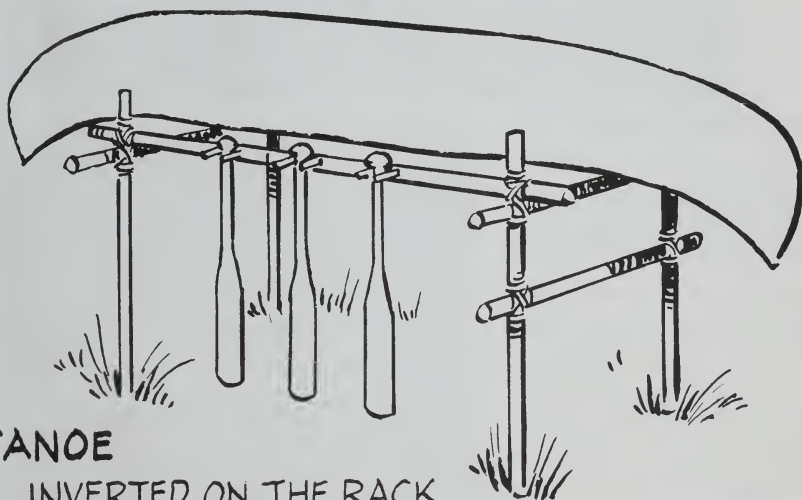
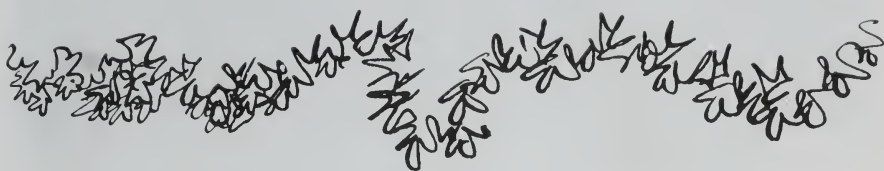
Launching

Good canoeing skills are needed from the moment you first touch the canoe. This first contact should be on land.

All canoes should be properly stored out of the water, upside down on a rack that holds them clear of the ground. Ideally, the rack would be shaded and at least one and one-half canoe lengths from the water. Sun protection is essential if your canoe is made of wood, canvas, or other natural materials. Aluminum canoes are not damaged by the sun, but can quickly become too hot to handle on a sunny day. Canoes made of synthetic materials will benefit from sun protection, and the manufacturers' instructions should be followed carefully on this point.

The first task is to safely remove the canoe from its rack and carry it to the edge of the water. The best arrangement is for the canoe to be kept on a rack with open ground beside it where the canoe can be set down. Another common way of racking canoes is to have them side-by-side, without space, except when a canoe has been removed from the rack and one space is open. These two rack arrangements require different techniques in lifting and carrying the canoe.

Even if you are big enough to lift and carry a canoe by yourself, it is always easier, safer, and smarter to use a companion when lifting and carrying a canoe from its rack. Before removing a canoe from the rack, you should determine that the ground area is clear of any rocks, stakes, or other objects that could be a hazard for you or that could damage the bottom of the canoe. If you are removing a canoe from a rack where there is open ground beside the canoe, begin with one person at each end of the canoe. Lift the canoe, holding securely at each end, and step sideways until you are clear of the rack and there is open ground under the canoe. Now carefully turn the canoe until it is upright. Before turning, you should communicate with your companion to be sure both people know which way the canoe is going to be



CANOE

1. INVERTED ON THE RACK
2. IN THE SHADE
3. OUT OF THE WATER
4. GOOD REPAIR
5. CLEAN OUT DIRT AND SAND FREQUENTLY

PADDLES

1. OFF THE GROUND
2. IN THE SHADE



Grasp canoe securely by deck and keel.

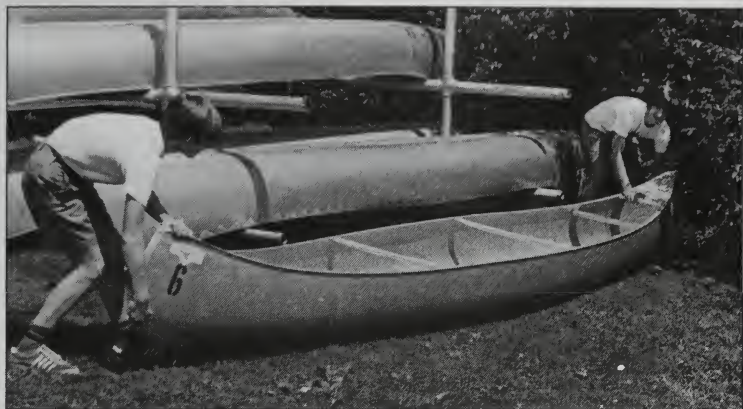
turned. It is usually wisest to roll the canoe in the direction away from the canoe rack. Then set the canoe down carefully, right side up, on the ground.

If your canoe is racked side-by-side with others, without open ground at either side, you will have to use the lift and walk technique. Begin with one person at each end of the canoe, facing each other. Lift the canoe, holding securely at each end, and turn it carefully until it is right-side up. Carefully set the canoe back down on the rack. Move to opposite sides of the canoe by the breastplates, with both people facing the water or the direction in which the canoe is to be moved. Each person then grasps the inside edge of the breastplate or the gunwale near the breastplate and lifts the canoe off the rack. Now walk forward, with the person at the rear stepping carefully over the two low beams of the rack, until the canoe is clear of the rack and can be put down. Move slowly and cautiously, for a fall here could do serious damage to you and the canoe.

If turning the canoe while holding it in the air is awkward or the individuals are too small to perform this particular maneuver, you can set the canoe down, upside down, and then turn it carefully on the ground. Obviously, in order to turn it after you set it down, you're going to need additional clear area so that you can roll it from the upside down position to right side up.

Put your equipment into the canoe, including paddles and personal items, while the canoe is on the ground near the rack. Do not heavily load the canoe at this point, as this will make it much more difficult to carry to the water. You also do not want to load the canoe on the ground in such a way that it will flex and be damaged.

To carry the canoe to the water, you and your companion should stand on opposite sides of the canoe, in line with the edge of the breastplates or the first thwart from the bow and stern. Grasp under the breastplate or at the thwart and stand up together, lifting the canoe with your legs and back and keeping your arms straight. Then walk forward until the end of the canoe closest to the water is at the water's edge. Set the canoe down carefully.



Lift canoe off rack and set on ground.



Lift at breastplate on opposite sides and walk to water.

At this time, you should decide whether the canoe is going to be launched stern first or bow first. The most stable way to launch and board the canoe from a beach is stern first. If you are going to be launching into a current or into a wind, or if the beach area is arranged such that a turn will be difficult after the launch is completed, a bow-first launch may be appropriate.

If you are going to make a stern-first launch, and the canoe is sitting at the edge of the water with the stern nearest the water, you and your companion should now stand facing each other across the canoe at the midship position. Grasp the canoe on both sides at the gunwale and lift it off the ground, using your legs and back and keeping your arms straight. You should then walk sideways until you are standing at the water's edge or in shallow water



Standing at the ends of the canoe, facing each other, lift carefully and turn the canoe over so that it is right-side up.

Set the canoe back down carefully on the rack, right-side up.



With a buddy on each side of the canoe, approximately in line with the breastplate, lift the canoe off the rack and walk forward carefully.

Be careful when stepping over the low beams of the rack.



right at the edge of beach. At this point, pass the canoe toward the water, hand-over-hand, holding on to the gunwales until the stern of the canoe is supported by the water. Continue to push the canoe out, hand-over-hand, standing in the same position until you and your companion are both holding the breastplate and the canoe is supported on the water. The bow of the canoe should be set gently on the water. Make sure that the canoe is floating free with nothing under it except water. The bowman then remains at the canoe, with his hand on the breastplate or bow, while the sternman fetches any equipment that still needs to be loaded into the canoe.

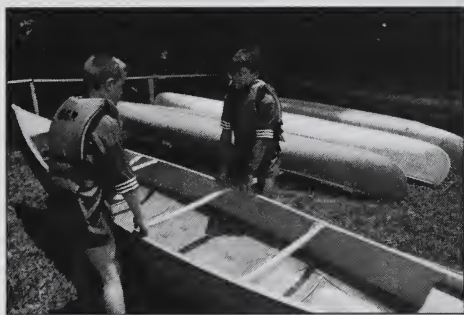
Before boarding the canoe, the gear should be placed in such a way that it presents no hazard to someone boarding, and will not be broken if someone loses his balance and falls or steps on it accidentally. Paddles should be laid flat in the canoe, not leaning on a thwart. If the canoe is in water shallow enough to stand in, the sternman should walk out beside the canoe to place and secure the remaining equipment. If you're launching onto deep water, the canoe can be pulled alongside the shore for loading and boarding.

Up to this point, the launch procedure from a beach would be the same whether you were launching bow first or stern first. The procedures are quite different, however, when it comes to getting yourself into the canoe. When launching stern first from the beach, the bowman is in charge of the boarding procedure. He begins by pointing the stern out at right angles to the beach, making sure that the canoe is floating free of the bottom and any rocks. In a very shallow area, it may be necessary for the bowman to walk out into the water a few feet in order to get the canoe clear. It is most important that the bowman check to be sure he cannot see light under the canoe, indicating that the canoe is "bridging" between two points. A common cause of structural damage in a canoe is when someone steps into a canoe that is "bridged" and puts weight on the keel or ribs without water supporting the canoe.

When the bowman is ready to begin the boarding procedure, he kneels at the bow of the canoe, with one knee on either side of the bow, and grasps cross-armed across the breastplate. Holding securely in this position will prevent the canoe from tipping to either side when his companion steps in. You may also find it helpful to use a paddle to help hold the canoe. You do this by placing the tip of the paddle in the water against the bottom with the blade flat against the side of the canoe. If there is a breeze or current, put the paddle on the downwind or downstream side of the canoe. Rest the loom of the paddle on your shoulder with the grip extending past your neck; then wrap your arm over the loom and across to hold the breastplate near the

opposite side of the canoe. Your other arm reaches across the breastplate from the other side. This grip, with the help of your knees on either side of the canoe, allows you to control the side-to-side tipping of the canoe. It also helps you keep the canoe pointed out from the bank. The exact position of the paddle and hands is not as important as the bowman being confident that he has a secure hold on the canoe, and will be able to control the movement of the canoe while his companion boards.

When the bowman is in position and ready, he tells the sternman to get in. The sternman should walk into the water to a spot about even with the bow thwart and then turn and face the bowman. Leaning forward and placing a hand on each gunwale, the sternman steps in with the leg nearest the canoe and places his foot on the keel while keeping his weight momentarily on his leg that remains in the water. When his foot is placed firmly on the keel, he shifts his weight to that foot and to his hands on the gunwales of the canoe, and lifts his other leg into the canoe. As soon as he has both feet in the canoe, he should lower his back end with his head up so that his center of gravity is low in the canoe, and he is facing the bowman holding the canoe. On signal from the bowman, the sternman then backs along the keel of the canoe, stepping over the thwarts as he gets to them, and keeping his



Face each other holding onto the gunwales.

Push the canoe out until it is supported by the water.



weight low with his hands on the gunwales. When the sternman gets to his position, he should kneel, get settled, and check his balance. He then puts his paddle into the water, against the bottom of the lake, with the blade flat against the side of the canoe and the loom straight up. The sternman is now going to brace the canoe so that the bowman can release his hold at the bow and get aboard. To brace the canoe in the stern position, the sternman grasps the throat of the paddle that is in the water against the canoe and hooks his thumb over the gunwale. With his other hand on the grip, he has made a post in the water and secured the canoe to that post. When he is ready in this position, he tells the bowman to board.

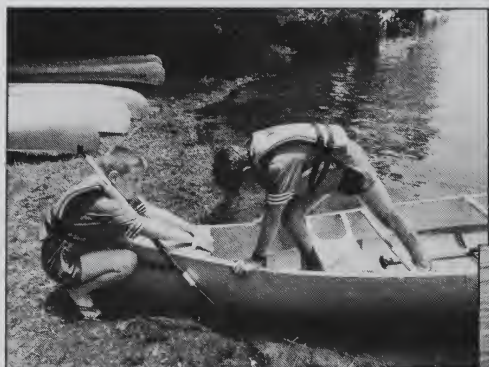
The bowman begins boarding by releasing his hold on the canoe and walking in shallow water to a spot even with his position in the canoe. After stowing his paddle flat in the bottom of the canoe, and out of his way, he grasps the gunwales, just as the sternman did, and steps into the canoe one foot at a time, shifting his weight in the same manner as described for the sternman. After he is in the canoe, the bowman backs up, stepping over the thwarts until he is in a position just aft of midship. This will raise the bow of the canoe off the bottom in the shallows near the edge of the water. With the bowman in this position, and kneeling low, the sternman releases his post hold of the



Bowman braces to control movement of the canoe.

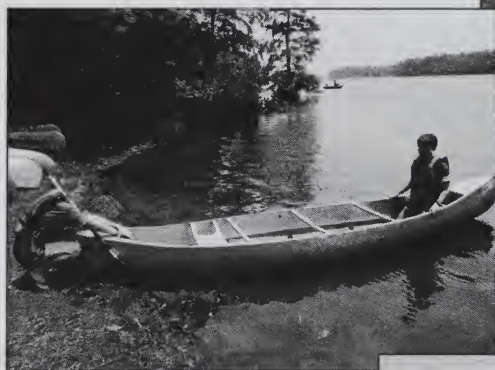
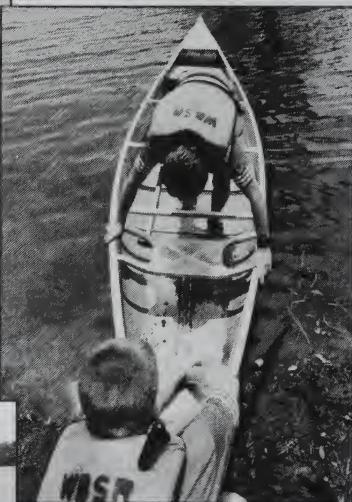


Sternman steps into canoe near the bow.



Sternman keeps his weight over the keel and lowers his center of gravity.

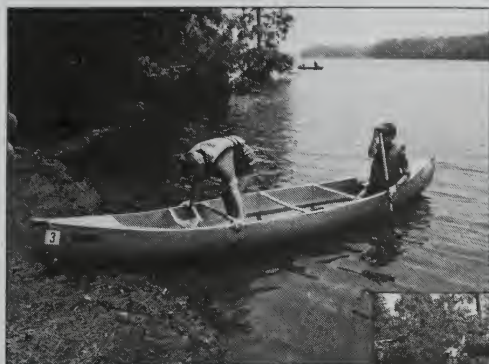
On signal from bowman, sternman backs along keel, stepping over thwart as he comes to them.



Once in position, sternman kneels, gets settled, and checks balance.

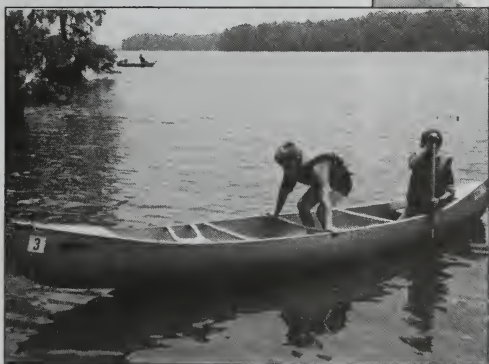
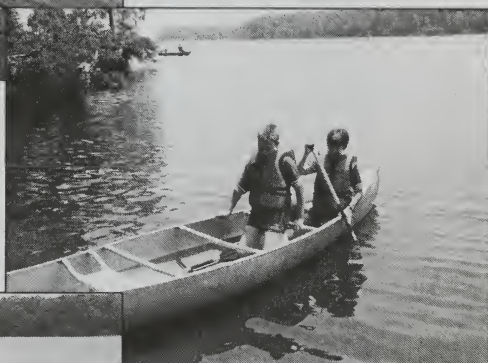
Sternman makes a post with his paddle and tells bowman to get in.





Bowman enters the canoe as sternman did.

Bowman gets in position aft of midship; sternman releases post.



Once clear of the beach, sternman holds his position, and bowman moves forward.

canoe and makes several short reverse strokes to back the canoe away from the beach. Once clear of the beach, the sternman stops paddling and holds his position steady while the bowman moves forward to his position and gets settled, retrieves his paddle, and is ready to begin paddling.

When launching bow first from the beach, the roles are reversed with respect to who gets in first and who steadies the canoe. The sternman will take the position at the beach, bracing the canoe and giving instructions to the bowman about boarding. As before, both paddlers board the canoe facing the bow, except that the bow is now facing away from the shore. This means that the bowman will enter and move forward. He will then steady

the canoe with the post position while the sternman enters and moves forward to just fore of midships so that the canoe can be cleared from the shallow beach area. Once clear of the beach, the sternman will then move backward to his position, and the two-man team is ready to begin paddling.

Launching from a pier involves some different maneuvers. If the canoe is taken from the rack and then walked out onto the pier, the procedures are essentially the same, up to the point where the canoe has been set down on the pier right side up and you are ready to begin the actual launch. If the canoes are stored on the pier, it is a simple matter to turn the canoe over and begin the launch procedure.

While one person steadies the canoe, the other person sits on the pier with his feet in the canoe.



The person entering then shifts his weight into the canoe.

He then moves into position.





He then steadies the canoe against the pier as his partner enters.

The partner gets into the canoe following the same procedure as his companion.



Keep your center of gravity low as you get into position.

Once the second person is settled, the companion gently pushes the canoe away from the pier.





Launching from the pier is very similar to shore launching, except you are not able to step into the water. (A pier launch is also done from a shoreline when the water immediately drops off to a depth that prevents stepping into the water to launch and board.) With the companions facing each other across the midship section, the canoe is lifted by the gunwales and passed into the water hand-over-hand, just as is done from the shore. Whether the bow or stern goes into the water first from the pier is of no importance.

After the canoe has been placed on the water, it is turned alongside the pier with one gunwale against the side of the pier. One person then kneels or sits on the pier and holds the gunwale of the canoe steady while the other loads the equipment and secures it for boarding.

While one person continues to steady the canoe against the side of the pier, the other person sits on the pier with his feet in the canoe. He then shifts his weight to his feet in the canoe, over the keel, with one hand still on the pier while he reaches to the gunwale on the opposite side with his other hand. When his weight is in the canoe, he then moves forward or backward to his paddling position and gets settled. When he is in position, he holds the pier with one or both hands to steady and secure the canoe against the side of the pier while the other paddler boards.

The person holding and steadying the canoe is always in charge during the launching and boarding procedure. When the man in the canoe has a secure hold on the dock, he then tells his partner to get in. The partner gets into the canoe following the same procedure as his companion, and moves to his position. When the second person is in the canoe and settled, the companion holding the pier then releases and gently pushes the canoe away from the pier for sufficient clearance to begin paddling.

The Paddling Art

Flatwater paddling is simply a matter of reaching forward, grabbing the water, and pulling the canoe along. As simple as it sounds, the first-time paddler usually experiences a good deal of frustration and may conclude that paddling is hard work. The more you understand about the paddling art, however, the easier it becomes and the more confident you will be regarding which stroke or maneuver produces the desired result.

Several basic principles of paddling should be kept in mind. First, once you have grabbed hold of the water on a paddling stroke, don't let go until the stroke is completed. Second, minimize water and wind resistance. Third, make use of your momentum. Finally, avoid wasted effort.

The first principal, *grab and hold*, is important for the power strokes, and is the most important factor in sculling and single-man pivots. You need to know which side of your blade is doing the pushing against the water. If you change the side of the paddle that is doing the pushing in the middle of a stroke, you obviously lose your power and control and have to use a lot more energy and effort to make up for that loss. This point also comes into play when you are developing your long, smooth, steady stroke—as opposed to a short, choppy stroke that is constantly releasing water and causing you to make another grab.

Avoiding *resistance* is not simply a matter of cosmetic appearance. A failure to take wind and water resistance into account can convert an easy 30-minute paddle into an hour-long struggle against the elements. We have already considered one effect of wind resistance when we discussed trim and balance and heading into the wind. When paddling into a strong wind, the bow should be pointed squarely into the wind, or the additional resistance of the wind against the side of the canoe will make controlling the direction of the canoe very difficult. If you get caught in a strong wind, the heavier end of the canoe should be pointed into the wind and you should head for the nearest shore to take the canoe off the water until weather conditions change.

Another source of wind resistance, and potential water resistance, frequently overlooked by the inexperienced paddler is the paddle. If the paddle is held out of the water, with the blade flat against the wind, it acts as a sail. Also, if the blade is held flat against the air as it comes forward to begin another stroke, it has more wind resistance, which adds to the work. You also risk being slapped by a wave, which can certainly add to the work, or even take the paddle out of the hands of the paddler. To minimize the wind resistance and the risk of losing the paddle to a wave, the paddle is *feathered*



Paddle blade stays in feathered position during recovery.

as it is swung through the air from the end of one stroke to begin another stroke. Feathering is done by turning the blade flat and parallel with the surface of the water so that it slices through the air. You want your blade to cut through the air like an airplane wing, and to cut through any wave that may slap at it while you are swinging it back to begin another stroke.

Another principal to keep in mind is *momentum*. The purpose of paddling is to get you moving, and once you are moving you have momentum. You don't want to throw away the momentum you've achieved every time you want to change direction or execute a maneuver (other than stopping). Ideally, you use the momentum to assist in your maneuver, whatever it may be. For example, if you are moving forward and want to turn to the port, it is far better to turn underway rather than stopping and restarting your forward movement. The paddling strokes you are going to learn can be classed in two categories: (1) those that permit you to maneuver the craft without losing momentum, and (2) those that are used to reduce forward momentum, or when the canoe is stationary. Those maneuvers that fall in the first category are not to be done in such a way that momentum is needlessly sacrificed.

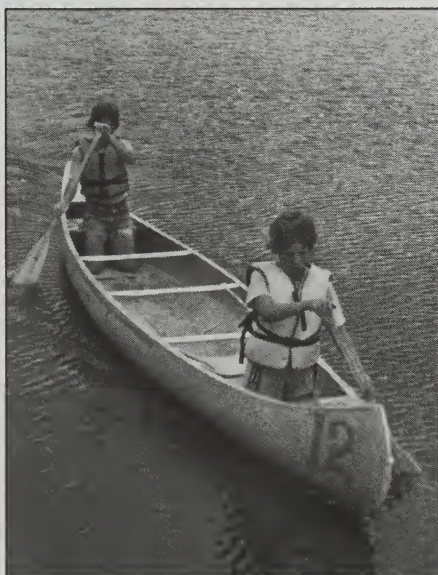
Now consider the fourth principal in paddling—*wasted effort*. Certainly you don't want to work harder than you have to, and the first three principles are all concerned with wasted effort. When you learn the strokes correctly, you will understand that each technique has been developed to avoid wasted effort. If you do something different from each technique, you not only look sloppy, but you are wasting energy. One good example is when you swing your paddle forward from the end of a stroke to begin the next stroke. A paddle has weight. If you swing it low above the water, you minimize the amount of strength that is being used. If you lift it high and swing it in an arc, you are obviously wasting the effort and strength that is required

to lift the paddle high and swing it through a greater distance. Conserve your energy, keep the paddle low, and travel the shortest distance between two points—a straight line.

Before learning the individual strokes, you should become familiar with stroke terminology. Every paddling stroke has four parts called (1) the catch, (2) the pull (or push), (3) the feather, and (4) the recovery. The *catch* is when you first grab hold or make contact with the water. The *pull* (or *push*) is the working part of the stroke that should accomplish your objective—to make progress or do a particular maneuver. The *feather* is the twist of the wrist that aligns the blade of the paddle with the surface of the water to reduce resistance. The *recovery* is the term used to describe what happens between the time you complete the stroke and when you are ready to start another stroke. Remember catch, pull, feather, and recover—you will find them in every stroke.

Paddling Commands

Because the bow paddler can't see what the sternman is doing, there are certain commands given by the sternman to coordinate the efforts of the two paddlers. In effect, the sternman is the captain of the ship and is in charge of the paddling activity (with some exceptions). The first command is *prepare to give way*, which means that both paddlers should assume the position ready to make the catch for the first stroke. The command *give way* means to begin paddling. *Let it run* means to stop paddling and let the canoe coast. In the *run* position, the paddlers lay the paddle across the gunwales with the blade extended out over the water in the feathered position. The command *hold water* means to slow the canoe's momentum or to hold it in position. The *stop* command means exactly what it says. (The hold water and stop maneuvers will be discussed with other strokes that are not intended to maintain forward momentum.) The sternman



may also call for specific bow strokes if he needs help in maneuvering the craft.

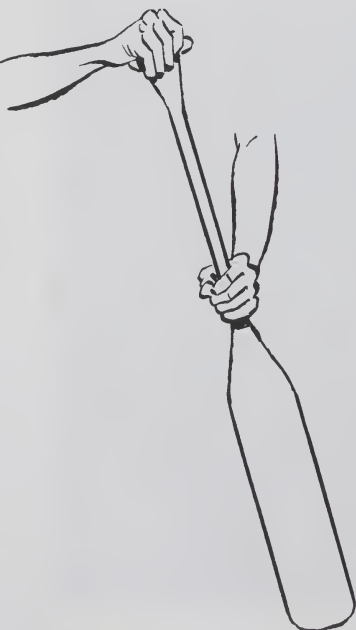
The bowman is not without responsibility, however. Obviously, the bowman is expected to watch the water in front of the canoe and to make whatever maneuvers, and give whatever commands, are appropriate to avoid hitting obstacles such as rocks or logs. In addition, the bowman sets the pace for the strokes. The sternman matches the timing and speed of the bowman's stroke so that the strokes are done at the same time. When the strokes are done together, the canoe is much easier to control and to maneuver, and there is considerably less wasted effort.

Bow Strokes Underway

The first three strokes to learn in the bow position are strokes used to achieve and maintain forward progress or momentum. If you are halting your forward progress in making turns using these strokes, then you are not executing the strokes properly.

Before doing your first stroke, be sure you are holding the paddle correctly. If you are paddling on the port side, place your right hand on the grip of the paddle and your left hand on the throat. To be sure you are holding the grip correctly with your right hand, begin by laying your hand on top of the grip, palm down, with fingers outstretched. The paddle end should touch the palm of your hand right at the knuckles, with the knuckles in line with the top of the grip. You then simply close your hand so that your fingers are on one side of the grip, the base of your hand is on the opposite side, and your thumb wraps around the side of the grip.

To check the placement of your hand on the lower part of the paddle, extend your arm down and slightly away from your body with the hand open, palm down, and fingers spread. Now lay the throat of the paddle between your thumb and index finger, with the blade of the paddle turned parallel with a line between the tip of your thumb and the tip of your index finger. Now simply close your hand around the paddle so that your thumb wraps around the



throat and your fingers are just below the throat, extending onto the upper part of the blade.

Bow Stroke

The bow stroke, or power stroke, is the simplest and one of the most important strokes in canoeing. It is also a good stroke to learn in order to understand certain principles that apply to other strokes.

The purpose of the bow stroke is to move the canoe forward. Paddling on the port side from a full kneeling position, the bowman leans slightly forward from the waist and extends his left arm (with his left hand on the paddle throat) forward and slightly down, keeping the elbow straight. The right hand is on the grip, with fingers facing forward, just in front of the chin. This is the "prepare to give way" or "ready" position for the "catch." The blade is perpendicular to the center line of the canoe, and extended alongside the bow. The catch is at a point as far forward as the bowman can reach comfortably without overbalancing, and very close to the side of the canoe.

The "pull" is down and back along the side of the canoe, with the right hand pushing forward on the grip while the left arm, with elbow straight, swings down and back in an arc. The grip hand supplies most of the power by pushing out in a motion like a boxer's jab. The left arm serves primarily as a pivot point and guides the paddle in a straight line along the side of the canoe. To get the most power with the least effort, the stroke should be very close to the canoe with the blade almost straight down in the water.

Why the straight elbow? Certainly it looks good, but cosmetics do not move the canoe. For best results, the paddle has to be in the water. (Air paddling does not give much for the effort.) When you bend the elbow during the pull of the stroke, you lift the paddle and end your stroke too early. Remember, once you grab the water, don't let go. The paddle should come out of the water at the end of a full arc, with the left arm straight and fully extended behind the paddler. If you bend your arm and lift the paddle too early, you will have to make more strokes, and consume more energy, to cover the same distance. Also, when you bend your elbow and raise the paddle during the pull, you are actually pulling up on the water, or "shoveling." Lifting the water wastes energy and actually slows the momentum gained during the stroke by pushing the canoe down in the water. The idea is to pull the canoe forward by pulling the water past the canoe.

At the end of the pull, roll the grip by turning the wrist so that the finger side of the grip is down. This will feather the blade of the paddle for recovery.

(The position of the hands never changes during power strokes. All movement of the grip hand is intended to move the paddle blade.) The recovery arc is to the side, left elbow straight, with the blade tip approximately 4 inches above the water surface. Recover in the feathered position all the way back to the ready point, and then roll the grip hand by turning the wrist so that the paddle blade is again perpendicular to the center line of the canoe. Now you are ready for your next stroke.

Quarter Sweep

The quarter sweep stroke turns the bow of the canoe away from the side on which the bowman is paddling. The name of the stroke accurately describes the way it is done.

The quarter sweep begins at the same point as the bow stroke. The difference is the blade angle. For the quarter sweep, the blade is turned straight up and down, perpendicular to the surface of the water. This stroke is called a "sweep" because the blade is going to travel along the top of the water, extended out in a wide arc as far as the paddler can reach. If the stroke were to be continued in one direction all the way around back to its starting point, it would draw a full round circle on the surface of the water. The term "quarter" is applied to this stroke because the full length of the stroke is one quarter of a circle.

The stroke ends at a position straight out from the side of the canoe, even with the kneeling position of the bowman. For best results, the stroke must end at this point because sweeping through the second quarter of the circle would add little additional turning effect for the effort. The first quarter pushes the bow away from the side on which the bowman is paddling; the second quarter would tend to pull the entire canoe to the side on which the bowman is paddling.

Now to put the stroke together: Begin with a catch, with the hand on the throat of the paddle extended forward as in the bow stroke, pull through the quarter sweep with one side of the blade down in the water and the other side near the surface or slightly out of the water. When the pull is even with your kneeling position, feather as in the bow stroke and recover to your starting point.

When you are under way and have good forward momentum, one quarter sweep in between power strokes will quickly move the bow away from the side on which you are paddling. Two or three quick quarter strokes will easily accomplish a full right-angle turn.

Diagonal Draw

The diagonal draw is used to turn the bow of the canoe toward the side on which the bowman is paddling. Again, the name of the stroke is descriptive of the way it is done. The path of the stroke through the water makes a diagonal line to the side of the canoe, and the effect of the stroke is to draw the water up to and under the canoe.

The catch position for the diagonal draw stroke is at a point exactly in the middle of the path of the quarter sweep stroke. The bowman extends the paddle as far as he can reach without overbalancing in this diagonal direction, with the inside of the blade facing him. The blade catches the water and pulls the water in a diagonal line straight to the paddler as though he were trying to pull the water into his lap. Just before the paddle makes contact with the side of the canoe, the diagonal pull ends and the paddle is feathered out of the water and recovered back to the catch position for the next diagonal draw.

If the draw is done effectively, the blade can be turned to the bow stroke position at the end of the diagonal pull and the stroke completed with the second half of the bow stroke. One strong diagonal draw that is finished with the pull of the bow stroke will easily turn the canoe to the side on which the bowman is paddling without losing forward momentum. Two or three quick, strong diagonal draw strokes will turn the bow to a full right-angle turn while maintaining forward momentum.

Changing Sides

An accomplished paddler can paddle with equal ease and strength on both the port and starboard sides. To balance your strength and endurance, and to develop your skills evenly, you should periodically change paddling sides while on the water. This is done on command from the sternman by continuing the recovery of your stroke over the bow breastplate, with the tip of the blade extended beyond the bow. As you swing the blade tip out over the bow in the feathered position, the hand on the throat slides up the loom of the paddle, and the grip hand releases the grip and reaches down to the throat. As the recovery reaches position for the catch on the opposite side of the canoe, the hands come to the proper positions on the grip and throat of the paddle. This procedure not only looks good, but it permits the bowman and sternman to maintain their stroke rhythm and pacing; minimizes wind and water resistance; and, when done smoothly, will not upset the trim and balance of the canoe. All of these considerations relate to momentum,

resistance, and wasted effort. Another advantage of this particular method of changing paddling sides is that no water is dripped or slung into the canoe from the blade of the paddle.

Do not change paddling sides to steer or control your canoe. Learn to use the strokes for steering and control. If you are switching back and forth to steer and control your course, you are wasting much effort and sacrificing momentum. You are also displaying your lack of skill and practice.

The bow stroke, quarter sweep, and diagonal draw are done on the starboard side exactly as they are done on the port side of the canoe, except that the left and right hand positions are reversed.

Stopping and Stationary Maneuvers

You are now ready to learn the bow strokes that do not produce or maintain forward momentum. When used at the proper time, they are important and useful. These strokes—the hold water, stop, pushaway, pullover, reverse sweep, and backwater—are done the same way on the port and starboard sides of the canoe, except that the activity of the left and right arms is reversed.

Holding Water and Stopping

On command from the sternman to “hold water,” the bowman puts the blade of the paddle deep into the water, even with his kneeling position, with the blade at a right angle to the center line of the canoe; he holds this position. The result is maximum water resistance without either pushing or pulling through the water. The easiest way to hold this position is to hook the thumb of the lower hand over the gunwale to lock in position and provide a pivot point. The hand on the grip then holds the blade in position in the water. If the hold water is done this way, the lower arm does not have to work against the water resistance. The work is transferred to the hand and arm on the grip, which has much greater leverage across the pivot point at the gunwale. If additional “hold” is needed, the grip hand can be pulled back.

If both paddlers hold water while under way, the canoe will rapidly lose its forward motion. It is a good way to slow to a stop. If the sternman is thinking ahead, he will give the “let it run” command, and then give the call to “hold water.” This should slow the canoe to a stop just short of the dock or pier or wherever the sternman wants. If the hold water position is maintained while the canoe is stationary, it will reduce the drift and shift of the canoe.

A quick stop is accomplished on command from the sternman. On the command “Stop,” the bowman reaches back to the end position of the bow

stroke, catches and pulls forward quickly and hard to the hold water position, and then continues to exert forward pressure with the paddle blade by pulling back on the grip, with the throat of the paddle locked against the gunwale with the thumb of the lower hand. If done effectively, while the sternman does a stop stroke from his position, the canoe should literally “stop on a dime.” At the end of the stop maneuver, the hold water position should be maintained.

Pushaway

The pushaway stroke moves the canoe sideways away from the side on which the bowman is paddling. If the bowman does the pushaway while the canoe is stationary, the bow of the canoe will swing away from the side on which the bowman is paddling. If the bowman does the pushaway at the same time that the sternman does the pullover, the canoe will move sideways while maintaining its forward heading. As before, the name of the stroke is descriptive of how it is done.

The catch position for the pushaway begins with the paddle blade deep in the water close against the side of the canoe, even with the kneeling position of the bowman. The blade is turned flat against the side of the canoe, parallel with the center line of the canoe. The “push” of the stroke may be accomplished in either of two ways. With the paddle straight up and down at the side of the canoe, the lower arm holding the throat of the paddle pushes out, with the grip serving as the pivot point. Alternately, from the same catch position, the grip hand can pull back, with the lower arm moving out as the blade travels out from the side of the canoe. The second technique will usually cause the loom of the paddle to contact the gunwale of the canoe and lever across, with the gunwale serving as the pivot point. This levering on the gunwale tends to produce a wear spot on the paddle—and on the canoe, if it is not metal. Also, if you are trying to move silently, you will want to avoid contact between the canoe and the paddle. As you master this particular stroke, you will find that you do the push naturally with a combination of pushing on the throat and pulling on the grip. Whether you use the gunwale for leverage will depend on your circumstances and purpose at the time of the stroke, and your concern about your equipment.

At the end of the push, the blade will be near the surface of the water and should be feathered for either an “in-the-water” recovery or a recovery above the surface of the water. The in-the-water recovery is more efficient and can be done silently. To recover in the water, you do not break the surface of the water with the blade. You feather the blade in the water at the end of

the push by turning the fingers on the grip hand toward the stern and slicing the blade through the water back to the catch position. (You could also feather by turning your grip fingers toward the bow. Do whichever is more comfortable for you.) The push and recovery parts of the stroke follow exactly the same path through the water. At the catch position, the blade is again turned parallel with the center line of the canoe by rolling the wrist so that the knuckles are pointing to the side.

The out-of-water recovery is done by having the paddle proceed on the push until it breaks out of the water. Keeping the paddle in this position just as it comes out of the water, and with the elbow straight, swing the blade of the paddle back to a position just behind the paddler. At this point, which is approximately the same point where the regular bow stroke begins its recovery, the blade is turned parallel to the center line of the canoe and sliced down and through the water back to the catch position. Obviously, the out-of-water feather and recovery are more complicated, but may allow the paddler to do a more rapid series of pushaway strokes. It will feel awkward, because the feather position is inverted from the normal feather position. If you are having difficulty making this feather and recovery, flip the paddle after it breaks the surface of the water and recover with the more comfortable knuckles-down feather position. This means, of course, that the blade will have to do a full 180-degree flip after completing the push part of the stroke. In most circumstances, you will find the in-the-water recovery much easier and more practical. (You do not need to master the out-of-the-water recovery in order to complete the merit badge requirement.)

Pullover

The pullover is the opposite of the pushaway. As always, the name is descriptive of the stroke. On the pushaway, you were grabbing the water and pushing it away from your canoe. In the pullover, you are going to reach out and grab the water and pull it straight to you. This stroke will move the canoe sideways to the side on which you are paddling.

The catch position for the pullover is with the paddle fully extended, straight out from your paddling position. The "pull" of this stroke starts where the "push" ended on the pushaway stroke: With the pulling side of the blade facing you, catch and pull in with the arm on the throat while the grip hand provides a lever point above the gunwale. The pull ends just before the paddle touches the side of the canoe. At this point, the blade should be deep and just slightly under the canoe. The feather and recovery are done in the water. You feather by turning the fingers on your grip hand toward the stern

(or bow, if more comfortable). Recover by pulling back slightly on the grip while pushing out with the arm on the throat of the paddle. Recover straight out from the canoe, slicing through the water to your catch position. End the recovery by turning the grip hand fingers out, and you are ready for your next stroke. Using the gunwale of the canoe for leverage on the recovery will only shorten your reach out to the side of the canoe and reduce the effectiveness of your stroke. You can make an out-of-water recovery by reversing the procedure for the out-of-water recovery on the pushaway, but the in-the-water recovery is recommended.

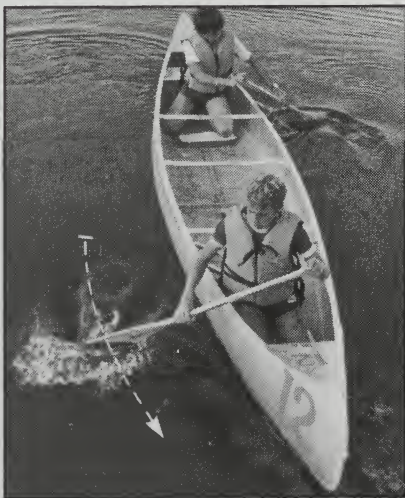
When the bowman does the pullover at the same time that the sternman does the pushaway, the canoe will move sideways to the side on which the bowman is paddling while maintaining its forward heading. If the bowman alone does the paddling and uses the pullover, the bow of the canoe will circle to the side on which the bowman is paddling.

Tandem pivots are done with the pushaway and pullover strokes. If both bowman and sternman do the pushaway, the canoe will pivot, with the bow circling away from the side on which the bowman is paddling. If the bowman is paddling on the port side, the canoe will pivot clockwise. When both paddlers do the pullover, the canoe pivots with the bow circling toward the side on which the bowman is paddling.

Reverse Sweep

The reverse sweep is not often used in the bow position, as it tends to move the canoe backward, with the stern making a wide circle away from the side on which the bowman is paddling. The reverse sweep is an important stroke when paddling alone, and is useful when paddling in the stern position. It is done in the same manner regardless of the paddling position.

The catch for the reverse sweep in the bow position is at the point where the bow stroke ends. As on all sweep strokes, the blade is



turned perpendicular to the surface of the water and sweeps in a wide arc, with one side of the blade down in the water and the other side at the surface. The power part of the reverse sweep travels in a wide arc from the catch position all the way around to the point ahead of the canoe where the bow stroke normally begins. The paddle is then feathered and recovered, following the same arc back to the catch position. During the pull and recovery, the lower elbow should be straight, with the arm on the throat extended as far out to the side as the bowman can reach without overbalancing.

Backwater

The backwater is a reverse stroke that makes the canoe back up. It is done the same way in both the bow and stern positions. The catch position is at the point where the bow stroke ends its pull. The blade angle is identical to that of the bow stroke—perpendicular to the center line of the canoe. Catch the water and push forward with a stroke that is essentially the opposite of the bow stroke. The lower arm serves primarily as a pivot, while the hand on the grip pulls back to give power to the stroke. The backwater stroke ends near the bow at the point where the bow stroke catches. The feather and recovery are the same as for the reverse sweep.

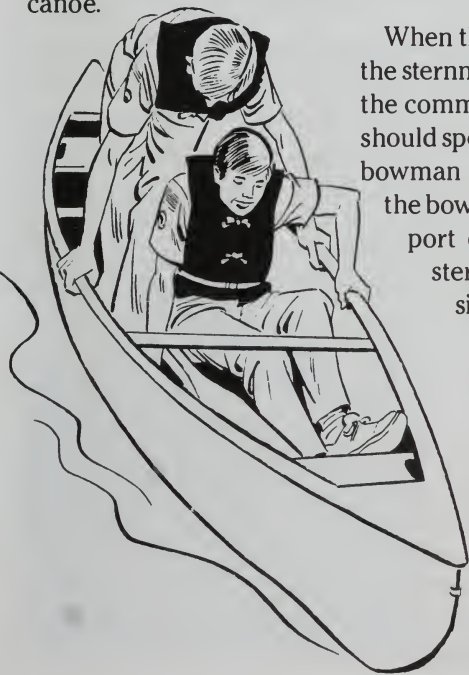
If the bowman does the backwater stroke alone, the canoe will move backward, but with a tendency to turn the stern away from the side on which the bowman is paddling. When bowman and sternman backwater at the same time, the canoe will track a straight line in reverse.



Changing Places

For various reasons, particularly when paddling for long distances, you and your paddling companion may decide to change places. If the canoe is fully loaded with gear in midship, you should head for shore or shallow water to make the change. If the midship is clear of gear, you can change positions while the canoe is afloat on open water, but remember to use your head—if there is a strong current or wind, go to shore to make your change.

Assuming that the circumstances are good for a change of places on open water, the first rule to remember is that the sternman is in charge. When the decision has been made to change places, the sternman holds water and directs the bowman to stow his equipment. The bowman stows his paddle flat on the bottom of the canoe where it will not trip anyone or get damaged. The next signal from the sternman is to move back to midship. The bowman then comes up from his kneeling or seated position, keeping his weight low and his hands on the gunwales, and steps backward over the thwarts to the midship position of the canoe. He then sits flat on the bottom of the canoe with his legs extended in front of him. Throughout this movement, and while seated, the bowman keeps his weight squarely centered over the keel of the canoe.



When the bowman is settled in the midship, the sternman safely stows his paddle, and gives the command to shift weight. This command should specify in which direction he wants the bowman to shift. On the command to shift, the bowman moves his weight slightly to the port or starboard of the keel while the sternman shifts his weight in the opposite direction. Now, keeping his weight low and his hands on the gunwales, the sternman rises from his kneeling or seated position and moves forward just to one side of the keel, stepping over the thwarts so that he passes the bowman at midship and proceeds forward to the bow paddling position. When the former sternman is settled in this position, the new sternman gives

the command to shift weight back to the center of the canoe. On command, both people move to reposition their weight over the keel. The new bowman then puts his paddle out in the hold water position.

Making sure that the new bowman maintains his hold water position, the new sternman then rises from his sitting position midships and, again keeping his weight low with his hands on the gunwales, moves back to the stern paddling position. When he is in position and ready, he gives the appropriate command to the bowman and the canoe is again underway.

Stern Strokes Underway

You have learned a lot about the stern position while learning the bow strokes. You know that the sternman is captain of the ship, with responsibility for maintaining the direction of the canoe, partly by giving stroke commands to the bowman. An experienced sternman paddling on flatwater, however, will rarely need to give a steering command to the bowman, because the sternman can easily control the direction of the canoe using the stern power stroke. The descriptive name for the stern power stroke is the *J-stroke*. The *J* stroke is the most important paddling stroke. If the *J* stroke has been mastered, the rest comes easily.

The stern paddling position gives the paddler greater leverage over the canoe. As a result, if both bowman and sternman are paddling with equal strength using basic power strokes, the canoe will veer to the side on which the bowman is paddling. The *J* stroke is a steering stroke; it is basically the same as the bow stroke, but slightly modified to correct the tendency of the canoe to turn away from the paddling side of the sternman.

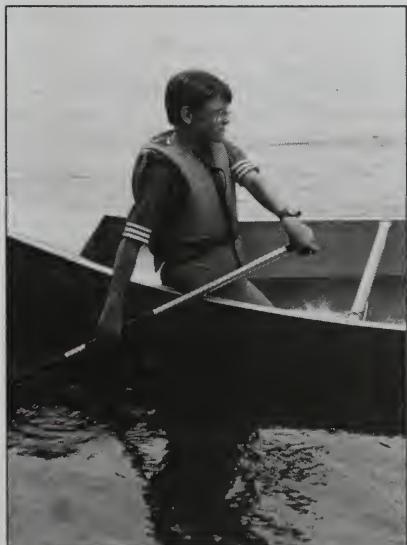
In most ways—such as the catch, feather, and recovery—the *J* stroke is identical to the bow stroke. It is the stern power stroke. The pull is only slightly different—90 percent of the pull is identical to the bow stroke; it's the last 10 percent of the pull that makes the difference.

Begin the *J* stroke by leaning slightly forward from the waist and catching at a position close to the side of the canoe and as far forward as the sternman can reach without overbalancing. The pull is done by jabbing out with the hand on the grip from approximately the chin of the paddler, while the lower arm swings down and back with the hand on the throat, serving as a pivot point. The blade angle should be perpendicular to the center line of the canoe. The movement is identical to that of the bow stroke up to the point where the lower arm has just passed the straight up and down position. Remember that when the lower arm is in this position, the blade of the paddle is well

past the straight up and down position because the grip hand has pushed out and forced the blade back against the water. At this point, the grip hand is turned from the knuckles down position to a thumb down position. This rotation of the grip hand turns the blade perpendicular to the surface of the water. The grip is then pulled slightly across in front of the paddler while the hand on the throat pushes out, forcing the blade away from the canoe and pushing the water sideways from the canoe. If the line of the paddle could be observed from directly overhead while paddling on the port side, it would draw a "J" on the surface of the water. (If paddling on the starboard side, the J would be drawn backward.)

The most common error in trying to learn the J stroke is the tendency to turn the thumb up in order to make the J part of the stroke. When this is done, the paddle releases its hold on the water and the paddler has to press sideways with the opposite side of the paddle. This sacrifices forward momentum and makes extra work for the paddler. What this incorrect maneuver attempts to do is to create a rudder. The principle of the rudder is drag, and that is exactly what is accomplished. It will correct the direction of the canoe, but it breaks the rhythm of the stroke and makes it impossible for the sternman to match the pace of the bowman unless the bowman also interrupts his rhythm. The net result is a 30–40 percent loss of stroke power. When the J stroke is done correctly, the paddle hold on the water is not lost, but the direction of the pressure shifts from straight back to slightly sideways.

The straight elbow on the lower arm is important in the J stroke. If the elbow is bent, the blade is lifted from the water too early, and the J motion is done out of the water. This accomplishes nothing. If the elbow is bent and the blade is kept in the water, it shortens the stroke substantially and sacrifices power.



Grip hand turns with thumb down to begin "J". Lower arm is straight with paddle blade near stern.

The *J* stroke should be done in a smooth motion with the same rhythm and timing as the regular bow stroke. Once you are underway with good forward momentum, it is not necessary to put a *J* on every stroke. The sternman watches his course heading and adds the *J* to the stroke as it is needed to correct the drift away from his paddling side.

The sternman makes turns underway by varying his *J* stroke. If he wants to turn the canoe away from the side on which he is paddling, he simply omits the *J* for several strong strokes and accomplishes his turn. If he needs to turn the bow of the canoe toward the side on which he is paddling, he simply exaggerates the *J* portion of the stroke. An exaggerated or slightly harder sideways action on two or three *J* strokes will bring the bow quickly toward the side on which the sternman is paddling. The sternman can, of course, accomplish the turn even more quickly by calling for the quarter sweep or diagonal draw by the bowman, depending on the direction of the turn. If the bowman continues his steady bow stroke, however, the turns can be made entirely through the effort of the sternman with little difficulty.

If you are not getting the intended result from the *J* portion of your stroke, you are most likely failing to turn the blade a full 90 degrees for the *J*. This frequently happens because the grip hand slips or shifts on the grip when the thumb is rolled down. You can practice this motion by simply holding the paddle in front of you, with both arms extended, and turning the wrist of the hand that is on the grip. Watch the blade until you begin to understand exactly what happens to the blade when you turn the grip hand. When turned correctly, both wrists are "humped." Remember, the position of the hand on the grip does not change on any of the tandem paddling strokes.

The second most common error on the *J* stroke results from bending the lower arm. Keep that elbow straight and you won't be shoveling or "air paddling" when you should be using a *J* to maintain your course.

If the sternman wants to make a quick sharp turn to the side on which he is paddling, he makes a hard full *J*, bringing the paddle around on a full hook to a position straight out from his side. This will turn the canoe sharply and substantially reduce the forward momentum. If the sternman wants to do a sharp turn in the direction away from his paddling side, he does this with a sweep stroke. The catch for the sweep is the same as for the *J* stroke but, as the name implies, the stroke sweeps wide near the surface of the water. The sweep in the stern position is similar to the quarter sweep, but it makes a full half circle back to the farthest aft point that the sternman can reach without losing his balance. A couple of sweep strokes in the stern position will turn the canoe sharply with limited loss of forward momentum.

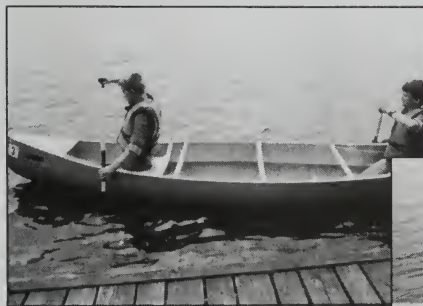
The other stern strokes used in tandem paddling for stationary maneuvers—pushaway, pullover, and backwater—are the same as those done in the bow position. The hold water and stop procedures are also essentially the same in the stern as in the bow. For the stop, the sternman reaches as far back behind his position as he can, catches the water sharply, and pushes forward with a strong motion to the hold water position.

Changing paddle sides in the stern position follows the same principles as in the bow position, except that the sternman ducks his head and swings the paddle blade over the stern breastplate with the tip beyond the stern.

Landing

When paddling with a companion, landing your canoe is simply the launching procedure in reverse.

If you are landing at a dock or pier, you should approach the dock at a slight angle, with your bow headed upwind or against the current. Stop the forward progress of the canoe a few feet from the dock, and then move the canoe sideways until one gunwale is against the dock. Use the pullover and pushaway strokes to move sideways, or simply drift with the wind or current. When you are against the dock, the sternman stows his paddle and holds the canoe against the dock while giving instructions to the bowman to get out. The bowman gets out of the canoe by first stowing his equipment and then reversing the process that was followed when getting aboard. Once he is on the dock, he then holds the canoe steady and tells the sternman to get out. The sternman also gets out by reversing the steps he followed when he got aboard from the pier.



Use pullover and pushaway strokes to move sideways.



While the one man continues to hold the canoe secure and steady at the dock, the other paddler removes the gear. To bring the canoe up onto the dock for storage, the canoe is turned out perpendicular to the dock with the bow or stern against the dock. The companions then face each other on the dock and hold on to opposite sides of the breastplate to lift the canoe and bring it hand-over-hand onto the dock.

When landing at a beach or lake shore, you should approach slowly and cautiously in order to avoid running aground or getting upset by an obstruction under the water. As soon as the bow touches bottom in the shallows near the shore, the sternman should brace and steady the canoe with the "post" position while the bowman stows his paddle and steps into the water. Holding the breastplate or gunwale near the bow, the bowman then walks the canoe forward until it touches ground. At this point the sternman also stows his paddle and steps out while the bowman steadies the canoe. If the bowman is able to bring the canoe forward to just off the shore without running aground, he should then brace the canoe and give instructions to the sternman to get out, following the same procedures used when launching except in reverse order. When both men are out of the canoe, one holds the craft while the other removes the gear. The canoe is then removed from the water and stored using the same steps involved in the launch but in reverse order.

If you are landing at a bank where there is a steep drop or retainer wall, the landing procedures are essentially the same as those for a dock or pier. If you are stepping out in unknown waters, or at any place where the bottom of the lake has not been specifically cleared for use as a landing site, be sure you wear appropriate shoes and move very cautiously throughout the landing procedure.

To repeat and emphasize one point: Do not ever drive the canoe up on the shore or beach. Instead, drift up like a feather until you touch bottom.

Overboard Maneuvers

No matter how skilled and experienced you are as a canoeist, there will be occasions, both deliberate and accidental, where you will go overboard. You must learn and practice the overboard procedures before you find yourself in the water. In this way, you will have experience, knowledge, and confidence when you need it. While practicing these maneuvers, you should work with your companion, under supervision, wearing a PFD, and "fully dressed."

Your clothing should consist of long pants, proper shoes for canoeing, and a long-sleeved shirt. Wear your bathing suit under the clothing. The clothing serves several purposes. First, part of your learning experience will be getting in and out of your canoe wearing the wet clothing, and steadying the capsized canoe while undressing. Second, the clothing protects you from scrapes and scratches while you are learning out-and-in maneuvers. Your clothing need not include anything more than shirt, pants, and shoes, although you should consider that when canoeing in cooler weather you are likely to be wearing considerably more clothing.

Overboard canoeing practice should be done on open water where the shoreline is easily accessible with 25 to 30 feet. Your supervisor or lifeguard should be within 15 to 20 feet of you at all times, and the maximum depth of the water should be 12 feet. There is no need to practice in water deeper than 7 or 8 feet. The practice area must be fully explored in advance to make sure there are no stumps, rocks, or other hazards that might injure someone going overboard from the canoe.

Before you can practice overboard and reentry procedures, you have to get safely out of the canoe. The absolute rule on going overboard is that you *never* lose contact with the canoe. Begin the procedure by stopping and steadying the canoe, with the sternman giving commands. Paddles should be stowed and all loose gear secured. You and your companion should be sure that no gear or obstruction will catch your feet when you go overboard. On signal from the sternman, both paddlers raise themselves from their kneeling or sitting position, with hands and weight on the gunwales and standing over the keel of the canoe. Your position is *tail high*. The sternman decides who goes over which side of the canoe, remembering that you go overboard on opposite sides when working with a companion. It is also important that you both move at exactly the same time, otherwise the canoe may flip over when you go overboard. The hand on the gunwale at the side that you are going to go over should be turned with the fingers inside the canoe and holding securely; the hand on the opposite gunwale should be positioned with fingers out, ready to release on the signal to go overboard.

When both paddlers are ready, the sternman gives the "jump" signal. With your weight forward on your hands, hop over the side of the canoe with both feet, keeping your feet and ankles close together. If your feet are apart, you risk hanging a heel or ankle on the gunwale as you go over. As your feet clear the gunwale, release the gunwale on the opposite side of the canoe and hang on tight with the hand on the side you're going over. (If done correctly, you will hit the water tail first.)



Get in tail high position.



Release the gunwale on the opposite side as feet clear the canoe.



Land in the water tail first without losing your hold on the gunwale.

If you go overboard correctly, the canoe remains upright and steady, you and your companion are in the water looking toward the stern of the canoe, and you do not get your hair wet. If you fail to hold on to the canoe as you go over and enter the water; you will go under the water and the canoe will drift away from you. If one paddler loses his grip and the other holds on, the canoe may capsize.



Reentry from overboard.

Getting back in is not at all tricky if you and your companion work together. The easiest maneuver puts you both in the canoe at exactly the same time. With both hands on the gunwale, position yourselves so that one person is just forward of midship and the other is just aft of midship. On signal, making sure you move at the same time, both of you should kick sharply in the water (use a scissor kick or whatever works for you) to pull yourself up on the gunwale to the point where your arms are straight down and the gunwale is just below your waist. At this point, it's like standing with your hands on a table, looking at your friend who is across from you and slightly to one side. If one of you is unable to pull up, or slips off, or falls backward, the other should immediately drop back into the water to prevent the canoe from capsizing. You are able to pull your weight up on one side of the canoe only because your companion is doing the same on the other side, thus keeping the canoe balanced.

If you have both made it to this position up on the gunwale, the rest is easy. Simply lean into the canoe and roll over so that you fall in tail first, landing on the bottom of the canoe. If you have done this correctly, you end up sitting on the keel with your knees bent over the gunwale and your feet hanging outside the canoe over the water. You can now bring your feet in and return to your paddling positions. Remember, be conscious of the movement of your companion. The best approach is for one man to give commands while the other man responds. This assures that you don't accidentally shift your weight in the same direction and capsize the canoe.

If one of you is unable to pull up on the gunwale for reentry, you can crawl in one at a time. One man stays in the water, hanging on the gunwale, while the person that is having difficulty crawls over the side by whatever means. The man in the water can pull down or push up slightly on the gunwale to

assist his companion. After the less agile man is in the canoe, he helps his companion by leaning to the side away from his companion to balance the canoe while reentry is completed. Sculling with the paddle can also help to balance the canoe. Although this "one at a time" reentry may require a little less in the way of agility, it takes much more time and effort. The other method is preferred and recommended.

If, in getting out and back into the canoe, you have taken on more than an inch of water, you need more practice. Water in the bottom of your canoe will affect your paddling as the water shifts and runs inside the canoe. The more water you have sloshing around, the more difficult it is to keep your trim and balance.

Capsize Procedures

There will also be times when your canoe will capsize and fill with water. The proper procedures in this situation must also be learned and practiced. To safely capsize your canoe for practice, go through the same preliminary procedures that you did when preparing to go overboard, up to the point where you are standing over the keel of the canoe with your hands and weight on the gunwales. This is the "ready" position.

On signal to capsize, you and your companion lean slowly toward the same side, with your weight pressing down on the gunwale on the side to which you are leaning while pulling up slightly on the opposite gunwale. The canoe will roll up on its side and begin to take water over the gunwale. With practice, you can learn to ride the canoe slowly down sideways until it is completely filled and then levels itself. The usual result is that, as the canoe fills, the high side will roll over, dumping the paddlers in the water. As the canoe begins to fill and roll, release your hold on the gunwale on the low side of the canoe, while holding tightly to the gunwale on the high side. If the canoe rolls over on top of you, simply pull yourself to the outside with the hand that continues to maintain contact with the gunwale.

As soon as the canoe is capsized, and you are in the water, the canoe will have a tendency to right itself even though it is filled with water. Without losing contact with the canoe, allow it to right itself and rise to the surface of the water. Check to make sure your companion is all right and is holding securely to the canoe, as you are. You cannot both hang on to the same side, as this will cause the canoe to roll. Position yourselves on opposite sides of the canoe facing each other at midship.

While hanging on to the canoe, check to see that all gear is still secured and will not interfere with getting into the capsized canoe. If there is gear

floating free that you can reach without releasing the canoe, it can be put back in the canoe. Do not release the canoe and swim to recover floating gear.

Even though the canoe is capsized, you need to get back in and paddle safely to shore. You and your companion can move at the same time to slide over the side of the canoe and roll in, bottom first. You will quickly discover, however, that a capsized canoe will roll over even more easily than one floating. Another way to reenter a capsized canoe is for one companion to remain low in the water and steady the canoe by holding on to the gunwale, while the other gets in. Then the person in the canoe leans to the opposite side to balance the canoe while his companion crawls in.

Once you are in a capsized canoe, you must sit flat on the bottom, directly over the keel, with your legs spread wide in order to get your center of gravity low enough to prevent the canoe from rolling over and throwing you out. The position for tandem-paddling a capsized canoe is for the paddlers to sit facing each other, with their feet near the center of the canoe and their backs against the paddling thwarts or seats. This helps not only with stability and paddling, but it also enables the paddlers to watch in all directions for oncoming craft. Remember that a capsized canoe is not easily seen on the water, and you need to watch carefully and be quick to signal if another boat is coming your way. Don't get run over! A paddle waving overhead can be an effective signal.

You can make forward progress sitting in a capsized canoe by using your paddle, or by paddling with your hands. Use the paddle by holding it at the grip and throat, reaching straight out with both arms extended, dipping the entire paddle just below the surface with the blade perpendicular to the water and pulling it toward you. While one companion pulls in this fashion, the other reverses the motion by starting the paddle against his chest and pushing. To change your direction, hold the grip close against your chest and sweep wide with the blade of the paddle. You can do a forward or reverse sweep depending on which direction you want to turn. By sweeping in coordination, tandem paddlers can pivot in place.

You can easily hand-paddle a capsized canoe by using your hands to pull or push the water. Sweep your hands just below the surface of the water similar to what you would do on the breaststroke or elementary backstroke. To turn while hand-paddling, sweep forward with one hand on the side you want to turn away from. Backwater with both hands to slow or stop.

It is not easy to get a capsized canoe moving, but once you are moving you will develop forward momentum even though you are moving slowly through water. This means that it will not be easy to stop suddenly because

the weight of the water will carry your canoe forward with considerable force, even when you are backpaddling and trying to stop. For this reason, remember to backwater and stop your capsized canoe well short of where you want to land at the shore or dock.

When you reach your stopping place near shore, go overboard carefully, and at the same time, so as not to roll your canoe over. Walk it to shore. If you are not able to get close enough to stand up, get out carefully while maintaining contact with the canoe, and tow the canoe the last few feet while swimming. One swimmer should hang on to the gunwale near the bow of the canoe and swim with a modified sidestroke, with his upper hand on the gunwale. The other companion should get just behind the stern and push, using the whip kick, with both hands on the stern. Another option is for the swimmer at the stern to use a sidestroke, with his upper hand pushing on the stern or holding the gunwale near the stern of the canoe.

There are several ways to empty a capsized canoe. First, while standing beside the canoe, remove the gear and place it out of the water. One person should stay with the canoe while the other carries the gear to shore. When the canoe is ready to be emptied, move it away from shore until you are standing approximately waist deep in water. With you and your companion standing on the same side of the capsized canoe, roll it over on top of you by pushing down on the near gunwale and pulling the far gunwale up over you. You will then be squatting slightly in the air pocket under the canoe. With hands on the gunwales and thwart or seat resting on your shoulders, you and your companion can stand up on signal, lifting the canoe clear of the water. If you will lean it slightly as you stand to break the airlock, it will be easier to lift. If the ends of the canoe do not quite clear the water when you stand, you can walk carefully toward shore until clear, or raise the canoe higher by extending your arms over your head. After the water has drained from the canoe, raise one side high by extending one arm upward and let the canoe roll gently over onto its bottom on top of the water beside you. (Before you begin to roll the canoe, agree with your companion on which way the canoe will roll.)

If you and your companion are not able to lift the canoe completely clear of the water, or if the bottom is too rough or the area too shallow for this to be safely done, another method is to move the canoe into shallow water where one end can be rested on the bottom of the lake with the canoe upside down. Then you and your companion stand at the end in the deeper water, facing each other on opposite sides of the canoe, and lift up using the bottom of the lake to support the other end. After the canoe has been lifted

and drained, roll it carefully toward one person and set it gently down on the water. If you and your companion can lift the canoe, but cannot get under it because of shallow water, you can simply roll it upside down, stand at opposite ends, and lift.

To empty a capsized canoe on a pier or dock, turn the capsized canoe perpendicular to the side of the dock. With you and your companion kneeling or lying down on the dock facing each other, roll the canoe over and lift one end up to set it on the edge of the dock. Then, while kneeling or standing, you and your companion move the canoe hand-over-hand until it is completely up on the dock and free of the water. After the canoe has drained, roll it over carefully toward one companion and then place it back in the water hand-over-hand. (This procedure is similar to emptying a canoe in a canoe-over-canoe rescue on the open water.)

Solo Canoeing

Solo canoeing, or single-man paddling, is not at all difficult if you have mastered the role of the sternman in tandem paddling. Remember that when you are solo canoeing, you still must have a buddy. Although you are alone in the canoe, there should always be at least one other canoe on the water as your "buddy boat." Be sure that your buddy is always aware of your circumstances, as you are aware of his, and that you and your buddy are prepared to lend assistance if needed.

Launching

You begin the launch procedure by rolling your canoe over and setting it upright on the rack or ground. It must be positioned so that you can stand beside it and have room to lift and carry the canoe. Be sure that your path to the water is clear.

Standing beside the canoe and facing the gunwale, place your hands on the gunwale slightly outside your shoulder width. Now pull up on the gunwale so that the canoe leans away from you slightly, and walk forward until the canoe is resting against your thigh. You can now lift the canoe by pulling the gunwale toward you and squatting slightly so that one or both of your thighs are against the curve of the canoe side. In this position, you should have the canoe off the ground or rack and resting on your legs, with your arms holding it in position by pulling toward you.

Holding the canoe, you now sidestep until you are standing at the edge of the water. The next step is to tip the end of the canoe that is closest to the water down until it rests on the water surface, and the water is supporting the weight of the canoe at that end. Now pass the canoe out into the water hand-over-hand while sliding the canoe along your thigh. In this way, you are transferring the weight of the canoe to the water, and it will quickly lift off your leg as it moves further out onto the water. When you reach the end of the canoe, set it down gently at the edge of the water. Remember to maintain contact so that the canoe does not drift away from you. If you need to walk away from the canoe to get your equipment, set the canoe so that it is firmly beached. Be sure there is nothing in the water or on the shore that will damage the canoe when you set it down.

The launch procedure from the dock is essentially the same, except after the canoe is in the water you pull it alongside the dock, with the gunwale

against the edge of the dock. If you have to leave the canoe in order to gather your equipment, you should tie it to the dock. If you tie both ends of the canoe, it will not drift out into the path of others, and it will be ready to load when you return with your gear.

As with tandem canoeing, secure your gear so that it will not shift out, or create a hazard for you as you move about in the canoe.



Standing beside canoe while it is upright on the canoe rack, lift one side of the canoe and lean the bottom against your thigh.

Lift the canoe off the rack by pulling the gunwale towards you and squatting slightly. The weight of the canoe is on your thigh.



Side step to the edge of the water.



Tip the canoe down to rest one end on the water.



Slide canoe out hand-over-hand with one end supported by the water.



Set end of canoe down on the water, but remember to maintain contact so it does not drift away.

Entry

To enter the canoe from shore in shallow water, walk out to a position where the canoe is floating freely and you are standing more than knee-deep in the water. Your entry procedure is similar to what the sternman does in tandem canoeing, except you don't have the bowman to stabilize the canoe while you get in. The safest way to board is to stand beside the canoe, facing into shore, bend down, and place your hands firmly on opposite gunwales. Now, with your weight on your hands and on the leg farthest from the canoe, lift the leg nearest the canoe over the gunwale and place the foot in the center of the canoe directly over the keel. Then shift your weight to the leg in the canoe, keeping your knee bent and your weight low; lift the other leg into the canoe and immediately go into a one-knee-down kneeling position by putting the knee of your outside leg on the bottom of the canoe right next to the foot that is on the keel.

Hold this position for a few seconds to be sure you are stable and floating free. If you are stable, you can now rise up with both feet on the bottom of the canoe, still keeping your weight low, and move to a position just aft of midship. This will be your paddling position. If the canoe is not aground, you are ready to settle into your position and take up your paddle. If the canoe is slightly aground, you can move further toward the stern until the bow floats freely, make a few backward strokes, and then move forward to your proper position. If the canoe is firmly aground, you should get out by reversing the entry procedure, and move the canoe further away from shore before reboarding.

If for some reason you need to launch and enter the canoe quickly from the shore, you can face out from the shore and step into the canoe as before, pushing off from the bottom just before stepping into the canoe with your outside leg. As soon as you have pushed, you should get your weight low and centered to avoid overbalancing and capsizing. This forward entry can also be used with the push-off, as an alternative to the entry while facing the shore. It is, however, less stable, more easily grounded, and more dangerous in terms of slips and falls and shallow-water capsizing.

If launching solo from a pier, after your equipment is loaded, untie from the pier and secure your painters inside the canoe. Remember to hold on to your canoe throughout the launch so that it does not drift away from you. A good way to maintain contact is to sit on the edge of the pier with your feet in the canoe. This is also your position for entering the canoe. When you are ready to get aboard, turn slightly, position both feet in the center of the canoe on either side of the keel, place your hands on the gunwales,

and shift your weight from the dock to your hands and feet in one smooth, quick motion. As you move, you will rotate your feet slightly so that you end up facing forward in the canoe. As soon as your weight shifts, squat down low in the canoe to balance and stabilize your position. Once your weight is in the canoe, and the canoe is stable, you should be able to settle right into your kneeling position and begin paddling. Dip your paddle on the side away from the dock and do a couple of pullover strokes to move clear of the dock.

Kneeling Position

If your canoe has a midship compartment, then you are ideally situated for solo paddling. Many modern canoes, however, have a thwart in the exact center of the canoe. For solo paddling in these canoes, your position should be in the compartment (the space between the thwarts) just aft of the center thwart. Any of the kneeling positions that you learned in tandem paddling can be used in solo canoeing, but the most stable position is with both knees down and your buttocks leaning back against the thwart.

You will notice that the canoe is considerably wider in the midship than it is toward the bow or stern. For this reason, you can paddle more easily if your weight is shifted slightly toward the side on which you are paddling. Position your knee away from the paddling side beside the keel, with the keel between your legs. The knee on your paddling side should be near the side of the canoe, right at the edge of the bilge. This position will lean the canoe slightly toward your paddling side, and make it much easier for you to reach the water and maneuver with the paddle straight down in the water rather than angled to the side. Your pressure on the water while you are paddling should counterbalance the slightly off-center position of your weight in the canoe.

Strokes Underway

For most solo canoeing, you will need to use only your basic stroke—the *J* stroke. When paddling solo from the midship position, the *J* stroke is virtually identical to what you do in the stern position when paddling tandem. From this position, you can quickly turn the canoe away from the side you're paddling on by doing a hard power stroke without the *J* action at the end of the stroke. If you want to turn sharply away from the side you're paddling on, a full sweep from your catch position, all the way around and back behind you, will accomplish your turn. You can make a gradual turn toward your paddling side by emphasizing the *J* part of the stroke on three or four strokes.

To turn sharply toward your paddling side, do a hard *J*, bringing the end of your stroke all the way up beside you so that you are almost doing a reverse sweep. This will, of course, slow your forward momentum considerably.

As you begin to get the feel of solo paddling, you will find that you can also modify certain bow strokes, such as the quarter sweep and diagonal draw, to maneuver your canoe while maintaining forward headway.

To maintain your course while paddling alone, particularly if you want to take the shortest route across a wide body of water, sight a point on the opposite shore and line that point up with the point of your bow. If you maintain your bow on that point, you will travel on a straight line.

Remember the rules about paddling in the wind. If you are heading into the wind, or if there is a crosswind that is affecting your direction, you should move to a kneeling position slightly forward of the center of the canoe and either head directly into the wind or angle into the wind while paddling on the downwind side of the canoe. You will find that you can work against a slight crosswind much more effectively with your sweep stroke on the downwind side than you can with your *J* stroke on the upwind side. Why? When you emphasize the *J* and slow your forward headway while paddling in the wind, the wind is better able to take control.

Holding Water and Stopping

You hold water and stop your canoe while paddling alone by using the same maneuvers that you learned for tandem paddling. Remember, however, that when you hold water or stop while paddling solo, the canoe is going to veer to the side on which you are paddling. You can correct this to some extent, although not entirely, by catching the water at an angle out behind you so that your stop action draws the water forward and slightly into the canoe. Viewed overhead, this stroke would look like a reverse diagonal draw stroke.

To correct the same drift while holding water when solo canoeing, stroke lightly as needed to reposition and turn the canoe.

Stationary Maneuvers

Backwater, pullover, and pushaway strokes are done in solo canoeing just as they are when paddling with a companion. Their function and purpose are also the same. If you are kneeling aft of midship you may want to reach slightly ahead of your kneeling position to do the pushaway and pullover in order to move the canoe sideways without rotation. The backwater or

reverse stroke will also tend to turn the bow of the canoe toward your paddling side. This can be corrected by beginning the reverse stroke slightly out from the canoe and behind you, like a reverse diagonal draw.

Pivots

The pivot maneuvers while paddling solo are very different from what you do when paddling with a companion. An *outside pivot* rotates your canoe on the water so that the bow is moving away from the side on which you're paddling. An *inside pivot* is just the opposite—the bow moves in a circle toward your paddling side.

When compared to other strokes, the single-man pivots are unusual in several respects. The outside pivot is the only flatwater canoeing stroke where you use the paddle on both sides of the canoe to complete the maneuver. Your hands, however, do not change positions on the paddle when you're doing the outside pivot. The inside pivot is the only stroke where you are going to change the position of your hand on the grip while doing the stroke.

The outside pivot is done by combining a reverse quarter sweep on the side of the canoe opposite your paddling side with a full sweep on the paddling side of your canoe. Begin by twisting your body away from your paddling side and reaching across the canoe to a catch position straight out from



Reach across the canoe from paddling side to start reverse quarter sweep toward the canoe on that side.



After the reverse quarter sweep on the right side, bring your paddle over the canoe to the other side.

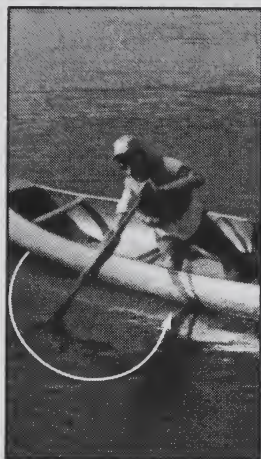


your kneeling position. In the catch position, your grip hand should be slightly behind you and close to your body at about belt level. Make a reverse quarter sweep up to your canoe, then lift the paddle from the water and feather it, with fingers down, over your canoe. Now, dip the paddle again on your paddling side for the catch of a forward sweep. At the end of a full forward sweep, feather and recover all the way back to the catch position for the reverse quarter sweep on the opposite side. One strong outside pivot stroke can rotate you in a full circle. At most, you should complete your pivot with two strokes.

Execute a full 180-degree sweep on your paddling side. This will complete the entire pivot action.

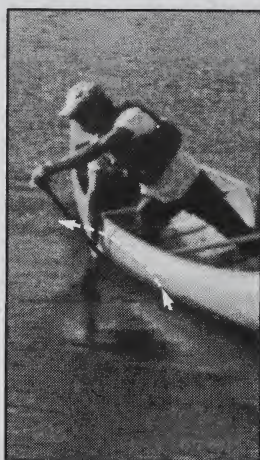
The inside pivot is done only on the paddling side of the canoe. The trick is to move your paddle in a circle in the water beside your kneeling position. You must keep the same side of the paddle pushing against the water at all times. The circular path of the paddle is going to be clockwise when done on the port side and counterclockwise when done on the starboard side. Basically what you are doing is combining a reverse sweep with a forward sweep. The forward sweep, however, reaches under the canoe instead of reaching out from the canoe. If you don't reach under the canoe, you won't get any turning action from this part of the inside pivot stroke.

Begin the inside pivot by making a wide and full reverse sweep on your paddling side. At the end of the reverse sweep, turn your hand on the grip so that the pressure is maintained on the same side of the paddle blade. Lean out over the water so that you can reach far under the canoe while you do the forward sweep. As you complete the forward sweep, shift your hand on the grip again to keep the pressure on the same side of the blade, and do another reverse sweep. You will probably need to make two full pivot strokes to turn your canoe. If the canoe is only rotating on the reverse sweep part of your stroke, you aren't reaching far enough under your canoe on the forward sweep portion of the stroke. Be careful, because your weight will be



Begin the inside pivot by making a wide and full 180-degree reverse sweep on your paddling side.

At end of reverse sweep, turn your paddle so that the pressure is maintained on one side of the blade.



Lean well out so that you can reach far under the canoe while executing a sweep toward the stern.



Maintaining constant pressure on the same face of blade, prepare for another full reverse sweep.

well out over the gunwale while you are doing the forward sweep part of the stroke. If you fail to maintain pressure on the water, there is nothing to counterbalance your lean, and you may capsize or go overboard.

Having learned and mastered the outside and inside pivots for stationary rotation, you should now wonder if there isn't an easier way. There is. If you are paddling solo and want to head in the opposite direction, you can just turn around in your canoe. The bow of the canoe is simply the end of the canoe that is in front of you, and you can easily reverse that by reversing the direction you are facing. If your canoe has a midship compartment, you can do this in an instant. If your canoe has a midship thwart, you may have to move back over the center thwart after turning yourself in the canoe.

Sculling

Sculling is an alternative to the pullover and pushaway strokes. It can be used in tandem paddling as well as in solo paddling. The effect is to move the canoe sideways. The movement is usually slower than with the pullover or pushaway strokes, but it also requires less effort, and can be done silently and in small space. The term *sculling* in canoeing refers to the stroke that moves the canoe toward the side on which you are paddling (same as the

pullover). *Reverse sculling* moves the canoe away from the side on which you are paddling (same as the pushaway). As in all other strokes, you need to keep the pressure of the water against the same side of the paddle at all times. It may help to put a mark, or a "P", on one side of your paddle to remind you to always keep the pressure on that side of the paddle.

The action of the blade in the water when you are sculling is like the blade of a knife when you are spreading butter on a slice of bread. The blade makes a "Z" or figure eight pattern in the water, moving back and forth in a path that is about 2 feet wide and parallel to the keel. The grip hand angles the blade so that the leading edge of the paddle blade (the edge slicing through the water) on each forward and backward motion is turned slightly away from the canoe. The bottom side of the blade presses against the water at all times.

For reverse sculling, the top side of the blade presses against the water at all times, and the canoe moves away from the side on which you are paddling. Again, use the grip hand to angle the blade and to reverse the angle at the end of each forward and backward motion. For reverse sculling, the leading edge of the paddle blade (the edge slicing through the water) is angled toward the canoe.

Although sculling and reverse sculling may be confusing and awkward when first attempted, you will soon get the feel of it and find that it is easy to do if you remember to keep the same side pushing against the water at all times.



Sculling: Blade width at 45° angle to direction of desired line of movement. Maneuver blade in a continuous figure "8" or "Z" pattern, with abrupt changes of pitch as you reverse direction. The paddle stays down in the water at all times when sculling.

Landing

Landing solo is simply the reverse of launching. Always remember to approach the shore or dock carefully, while watching for obstructions in the water. Be careful not to run the canoe aground. When paddling alone, a rock or uneven bottom will not only damage the canoe, but can cause you to capsize or literally throw you out by suddenly lifting one side of the canoe and shifting the weight.

To remove the canoe from the water and place it on the rack, follow the same procedures you used in readying the canoe for your launch, but in reverse. You may want to begin by bringing the canoe as far up on the bank as you can before attempting to lift it on your thigh. You can, however, lift it directly from the water, while standing in shallow water. When carrying from the water, be very careful of your footing, both in the water and on land.

If you lack the size or strength to lift and carry the canoe for the solo launch and landing, get help. You should understand how to do the solo launch and landing, including carrying the canoe to and from the rack, but you do not have to be able to lift the canoe by yourself in order to pass this merit badge requirement.

PICKING UP PASSENGER FROM PIER

Use pullover to approach pier.



Stow paddle and brace canoe against pier while passenger begins entry.



**Passenger holds onto
thwarts to balance weight
as he enters canoe.**



**Passenger then holds
onto gunwales as he
steps into the bow
position.**



Deep Water Reentry

There may be times while paddling solo when you find yourself in the water. If your canoe capsizes, you should get in, sit on the bottom, and hand paddle for shore, just as you practiced with your companion in tandem paddling.

It is also possible, however, for you to fall or be thrown out of the canoe, leaving the canoe afloat and upright. Since the canoe is far easier to maneuver when it is afloat rather than capsized, it is far preferable to get back into the canoe without capsizing it.

If you do find yourself in the water, your PFD will support you while you prepare to reboard your canoe. Remember to maintain contact with the canoe. If you momentarily lose contact when you go overboard, move as quickly as you can to get hold of the gunwale. (Remember not to pull down on the gunwale, as the canoe will flip over on top of you.) Maintaining contact is

GOING OVERBOARD



Raise to the tail high position holding onto the gunwales.

Release the far gunwale as your feet clear the canoe.





Land in the water tail first with your feet and ankles close together.

very important, since an empty canoe moves very quickly, and even in a slight breeze it may be impossible for you to swim fast enough to catch it. If you have lost your canoe in this way, swim for shore, relying on your PFD for support.

To jump safely out of the canoe in order to practice your reentry, remember to go overboard just as you did when you were with a companion. Be sure to maintain contact with the canoe. Turn your hands so that your fingers are inside the gunwale on the side of the canoe you are going over. This will make it easier for you to maintain contact. Try to hit the water tail first, like you are sitting down.

ARM-ACROSS REENTRY

Begin from a position even with the center thwart.



Reach with one arm as far across to the other side as possible.



Kick hard bringing your weight across on the arm near the far side of the canoe.

With the near gunwale against your upper thigh, lay your weight across the canoe.



With one more hard dolphin kick, roll so that your hips fall into the canoe.

Your tail should land near the keel line.

With legs still out, hold your position long enough to assure that you do not overbalance. Then bring in your legs and resume your paddling position.

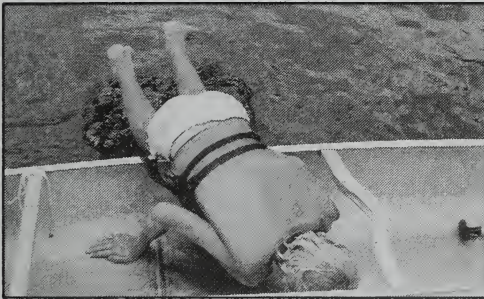


If you do have contact with your canoe, there are two ways to reenter in deep water—the arm-across method, and the “flopover.” The arm-across method for reentry has been taught since the early days of canoeing, and it worked relatively well for the skilled canoeist using a heavy, narrow, wood and canvas canoe. It is virtually impossible for a smaller person using a standard aluminum canoe. The flopover technique, recently developed and introduced in Scout canoeing, is ideal for the smaller person using a standard aluminum or fiberglass canoe. If you can do the flopover reentry, you will have little use for the other method and you will have satisfied the merit badge requirement.

FLOPOVER REENTRY FROM DEEP WATER



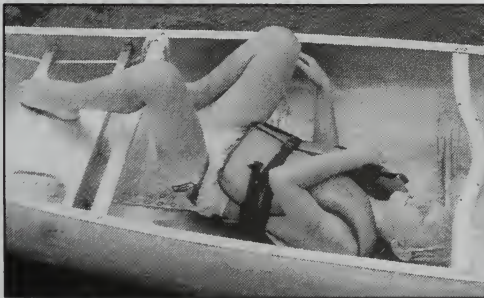
Begin with gunwale under your arms and hands flat on the bottom of canoe at edge of bilge. Straighten arms so canoe leans toward you.



Duck head, kick hard, bend one arm and drop shoulder, and prepare to roll hips over gunwale.



Tuck feet and legs and roll over gunwale with head and shoulder making first contact with canoe bottom.



Land flat on back with spine over keel, head extending under thwart and feet and knees high.

Canoe Rescues

A canoe is not the best rescue craft, but it can be used to assist other canoeists who have capsized. Follow the steps explained with the illustration. When using your canoe for an actual rescue, remember three important points: (1) the welfare of the people—not their canoe and equipment—is your first concern; (2) approach the people cautiously (keeping their canoe between you and them) and make sure they are not too panicky to follow your instructions; and (3) call out to quiet and reassure the victims, and tell them to hold on to their canoe.

Ignore the free-floating gear until you have the people safely back in their canoe. You can then retrieve floating gear and return it to them. You can approach a capsized canoe from either side, but if there is any wind, approach from the downwind side. Before approaching the capsized canoe, instruct the people in the water to move to the side of the canoe opposite the one you're going to approach. If there are two people in the water, they should be holding on to the gunwale on the same side of the canoe when you make your approach.

CANOE-OVER-CANOE RESCUE

Come alongside capsized canoe on the side away from the persons in the water, if possible.

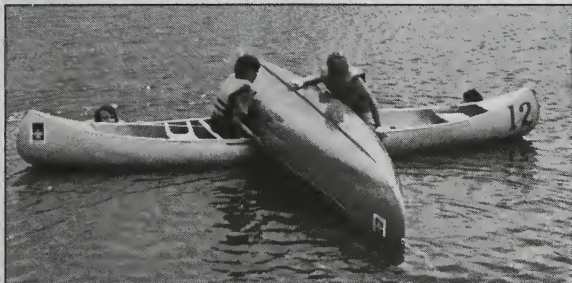


Hold capsized canoe and direct Scouts in water to hold onto your canoe.





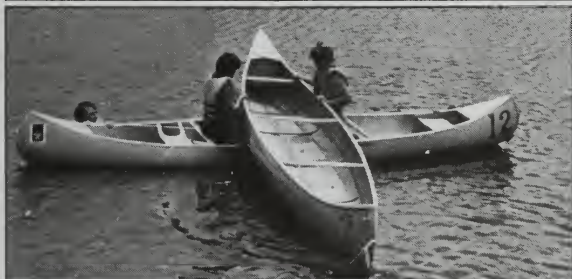
Swing capsized canoe at right angle to yours and turn it bottom up. Then lift up the canoe end and set it on the gunwale of your canoe.



Ease the other canoe across the gunwales of your canoe until it is balanced. This will drain the water.



Roll the capsized canoe over on the gunwales of your canoe in preparation for putting it safely back into the water.



Ease the other canoe back into the water, sliding it carefully off the gunwales of your canoe.



Hold the other canoe by its gunwales alongside yours as the rescued "victims" climb back in, one at a time.

Special Topics

Swimmer Assist

A canoe is not recommended for drowning rescues, but you can easily provide assistance to a tired swimmer. Remember that a tired swimmer is not a victim of a swimming emergency. A tired swimmer is just what the name implies—an individual who has been swimming and has begun to approach exhaustion, but who is still rational, under control, and maintaining himself in the water. What he needs is assistance and reassurance that he is not in danger.

If, when paddling, you see that a swimmer in open, deep water is getting tired, your first action is to call to the individual and ask him if he needs assistance. If there is a positive response, talk to the swimmer to calm and reassure him while you approach cautiously in your canoe. Do not paddle up to the swimmer, but stop 8 to 10 feet away and position your canoe so that the swimmer is directly out from your paddling position. Extend the paddle to the swimmer so that the paddle is between the swimmer and the canoe and the swimmer can grasp the paddle. Now explain to the swimmer exactly what you want him to do. Tell him to move to the stern of your canoe and hold on to the gunwales without pulling down. When the swimmer fully understands what you are going to do and what is expected of him, move him toward the stern of your canoe by swinging your paddle back. When the swimmer is in position, simply tow him by paddling to the nearest shore or shallow area. When the swimmer can stand, you should ask him to release the canoe and walk out of the water while you observe.

If the swimmer is too tired to hang on to your canoe, you can carefully capsize and help the swimmer into the bottom of the capsized canoe. Seat yourself in the capsized canoe properly and hand paddle to the nearest shore or shallow area. If you capsize while attempting to help a tired swimmer, you can still assist by using the capsized canoe procedure.

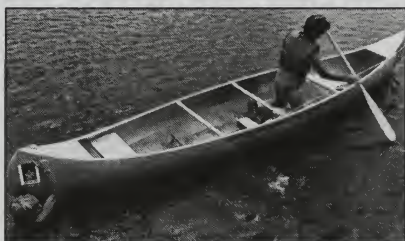


Rescuer approaches tired swimmer cautiously.



Rescuer extends paddle to aid the tired swimmer.

The tired swimmer hangs onto the stern and is towed to shore.



Equipment Care and Maintenance

Preventive maintenance and careful handling will increase the life expectancy of all canoeing equipment. Even canoes made of aluminum and synthetic materials should be protected from unnecessary abuse, and repaired promptly when needed. Remember that your canoeing equipment spends more time out of the water than it does in the water, and that most damage and deterioration occur when the equipment is carelessly maintained and handled out of the water.

In other parts of this pamphlet we have discussed the care and handling of canoes, paddles, and PFDs. To review briefly, canoes should be stored out of the water upside down, off the ground, on a secure rack. Some wind and rain protection is recommended. For long-term, off-season storage, canoes should be under cover and protected from the weather. If your canoe is not made of aluminum or a modern synthetic material, it should always be stored out of the sun and rain. Paddles should be hung up when not in use, and should be kept in the shade. PFDs must be properly dried, hung up when not in use, and protected from the sun.

Most canoes used in Scouting today are made of aluminum. These are clearly low-maintenance craft, but certain things must be tended to as they occur. Loose rivets, broken seats, damaged thwarts, broken ribs, and any hull damage should be repaired immediately. Thwarts and seats can usually be repaired or replaced with screws or bolts. Rivet repair requires some special hand tools, but can easily be done in a camp or home repair shop. Manufacturers and dealers for aluminum and synthetic material canoes can supply information and material for minor repairs.

Temporary repair of dents and punctures that occur while the canoe is in use can be done with simple equipment for aluminum canoes. Dents should be pushed out, either by hand or with a rubber mallet, if needed. Duct tape can be used for temporary repair of punctures or cracks. Puncture holes that are too large for taping can be stuffed with cloth, or even a wood plug, for a temporary repair that will enable you to paddle home.

Canoe Sailing

If you have a canoe, you can have a canoe sailing rig. Some dealers sell sailing kits for use with aluminum or other modern canoes. A canoe sailing rig can be improvised fairly easily from materials generally available at home or in camp.

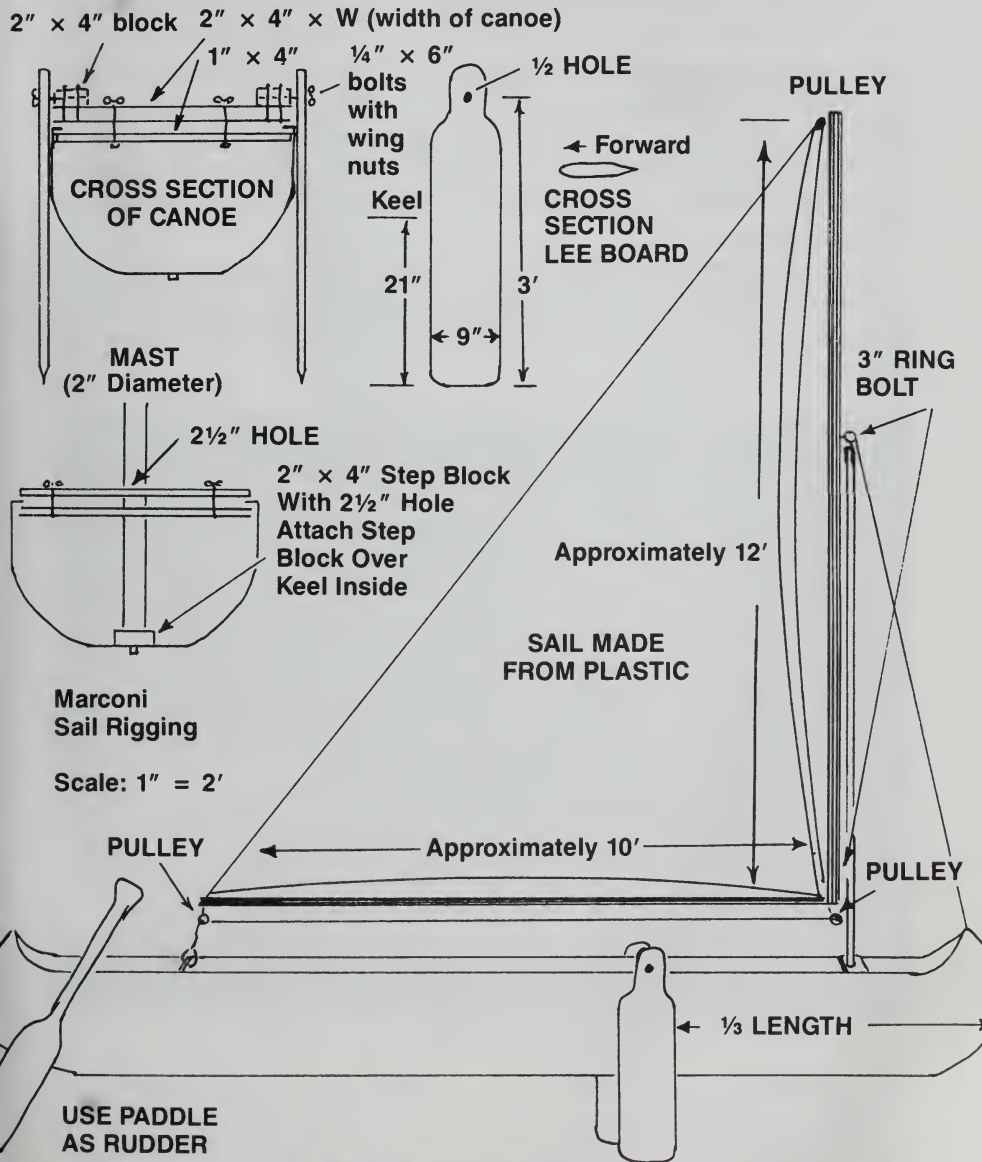
The BSA canoe sailing rig, as illustrated here, was first developed and published more than 50 years ago. This early publication noted: "Canoe sailing is one of the most thrilling forms of sport. Properly rigged, a canoe can be sailed as accurately as any small craft; it will point as high on windward work; come-about as handily; run well; can be gibed smartly when necessary; and it is safe, because even though swamped or capsized, it will not sink."

The BSA canoe sailing rig has been constructed and improvised in Scout camps and by Scout units over many years, and continues to be a fun and worthwhile project, combining both Scoutcraft and aquatic skills.

CANOE SAILING RIG

All Measurements Will Vary With Size of Canoe*

Lee Boards and Sail Supports



Moving Water

At this point in your skill development, the most important thing to remember about moving water is that an accomplished and experienced flatwater canoeist is *not* qualified for whitewater canoeing.

The primary difference between flatwater and moving-water canoeing involves the action of the water on the canoe. Remember that in flatwater canoeing you are reaching with the paddle to grab the water and pull yourself along. When canoeing on moving water, your forward momentum comes from the movement of the water—the water is actually pushing you along. For this reason, the paddle is not used for pulling yourself along, but instead is used almost exclusively for directing the course of the canoe and slowing forward momentum.

The best preparation for learning whitewater skills is to become an accomplished flatwater canoeist. You have now reached that point, and can look forward to developing whitewater canoeing skills and earning the Whitewater merit badge.



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Merit Badge Pamphlet	Year	Merit Badge Pamphlet	Year	Merit Badge Pamphlet	Year
American Business	1975	Environmental Science	1983	Plant Science	1983
American Cultures	1995	Family Life	1991	Plumbing	1989
American Heritage	1976	Farm Mechanics	1984	Pottery	1969
American Labor	1987	Fingerprinting	1983	Public Health	1985
Animal Science	1984	Fire Safety	1995	Public Speaking	1969
Archery	1986	First Aid	1995	Pulp and Paper	1993
Architecture	1995	Fish and Wildlife	1990	Radio	1989
Art	1968	Management	1988	Railroading	1992
Astronomy	1983	Fishing	1988	Reading	1993
Athletics	1964	Forestry	1984	Reptile and Amphibian Study	1993
Atomic Energy	1983	Gardening	1982	Rifle Shooting	1990
Auto Mechanics	1992	Genealogy	1988	Rowing	1993
Aviation	1968	Geology	1985	Safety	1986
Backpacking	1983	Golf	1977	Salesmanship	1987
Basketry	1986	Graphic Arts	1988	Scholarship	1988
Bird Study	1984	Hiking	1991	Sculpture	1969
Bugling (See Music)		Home Repairs	1993	Shotgun Shooting	1989
Camping	1984	Horsemanship	1986	Skating	1983
Canoeing	1989	Indian Lore	1959	Skiing	1994
Chemistry	1992	Insect Study	1985	Small-Boat Sailing	1995
Cinematography	1990	Journalism	1983	Soil and Water Conservation	1995
Citizenship in the Nation	1993	Landscape Architecture	1969	Space Exploration	1990
Citizenship in the World	1995	Law	1975	Sports	1972
Coin Collecting	1975	Leatherwork	1983	Stamp Collecting	1993
Collections	1991	Lifesaving	1993	Surveying	1992
Communications	1992	Mammal Study	1972	Swimming	1993
Computers	1993	Medicine	1991	Textile	1972
Cooking	1986	Metalwork	1969	Theater	1968
Cycling	1984	Model Design and Building	1993	Traffic Safety	1992
Dentistry	1975	Motorboating	1992	Truck	
Disabilities Awareness	1993	Music and Bugling	1994	Transportation	1973
Dog Care	1984	Nature	1991	Veterinary Medicine	1973
Drafting	1993	Oceanography	1993	Waterskiing	1984
Electricity	1991	Orienteering	1992	Weather	1992
Electronics	1977	Painting	1983	Whitewater	1989
Emergency		Personal Fitness	1992	Wilderness Survival	1984
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