

SUGGESTED CANOE EQUIPMENT LIST

Sleeping Bag and pad

Tent with rain fly and ground cloth

At least one gallon of water

Mess kit and eating utensils

Flashlight and extra batteries

Gloves

Waterproof bags such as garbage bags

Waterproof container such as ammo can

Cooking gear

Ropes for securing equipment

Dry clothes and shoes

Warm clothes for evening

Cooler

Suntan Lotion

Two 15' towropes

CANOEING HOW TO'S

Duffel Bag - Pack only those clothes that are absolutely necessary. Clean clothes very day are not a requirement. You will need a change of dry clothes, however.

Group small items (chapstick, soap, toothbrush, etc.) in a plastic bag. Double up with a buddy on items such as toothpaste, soap, etc.

Analyze your needs for warmth and pack accordingly. Usually a few layers of clothes that can be peeled off are better than one heavy jacket.

Toilets - Boulder Beach Campgrounds has running water and toilets. One outhouse is located at Arizona Hot Springs Canyon where we will be camping Saturday night.

Garbage - Carry all garbage out with you.

Dishwashing - Wipe dishes out with paper towel, pour in enough water to clean dishes (heat if desired), add 2-3 drops of detergent or baby shampoo, swish with ½ of a handiwipe, dump away from camp and rinse with clean water.

DO NOT wash dishes in river or stream.

DO NOT use soap or detergent in river or lake.

DO NOT wash your body in river or lake.

REMEMBER WHAT YOU DO TODAY, YOU MAY DRINK TOMORROW

CANOE TERMINOLOGY

Amidships – middle of canoe

Beam – width of canoe at widest part

Bow – front portion of canoe

Bowman – person, paddler, or passenger who occupies front or bow seat

Deck – flat triangular pieces of wood or aluminum on top of bow or stern ends of canoe

Gear – clothing and equipment carried by canoer

Gunwales – pronounced “gunnels”. Two hardwood or aluminum strips that bracket the ribs

Line – the rope used to tie up, tow or track a canoe

Portaging – carrying canoe and gear overland between navigable waters

Port Side – left side of canoe facing forward

Starboard Side – right side of canoe facing forward

Stern – back portion of canoe

Sternman – person who paddles from rear portion of canoe

Thwart – brace or crossbar

Windward – direction from which wind is blowing

Leeward – direction toward which wind is blowing

LOADING A CANOE

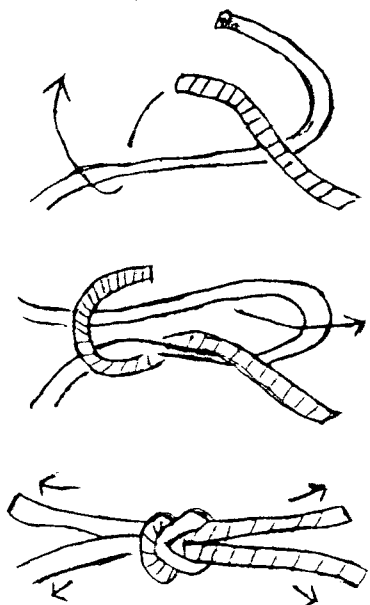
When loading a canoe, the bulk of the load should be in the stern. In a canoe carrying three persons, two packs should be placed directly behind the bow seat; the third person, riding dead weight, will sit on the bottom of the canoe directly in front of the stern paddler. A canoe with only two passengers should carry at least four packs, two or three to a compartment. Nothing should ride free in the canoe. Cameras should be in waterproof bags tied to the canoe. Fishing rods, with reels removed and in personal packs, should be bound together and tied to the thwarts. Packs must be placed on the bottom of the canoe to keep the center of gravity as low as possible. When traveling in rain, place three-inch logs in the bottom of the canoe to raise the packs out of the water. Cover the packs with a tarp. Under no circumstances should heavy food packs or duffle be tied to the canoe. When paddling alone, if going into the wind, move forward in the boat.

KNOTS YOU SHOULD KNOW

SQUARE KNOT

Use it: To join two ropes of equal thickness; tie a package; mend a broken rope or shoelace; tie a bandage for first aid.

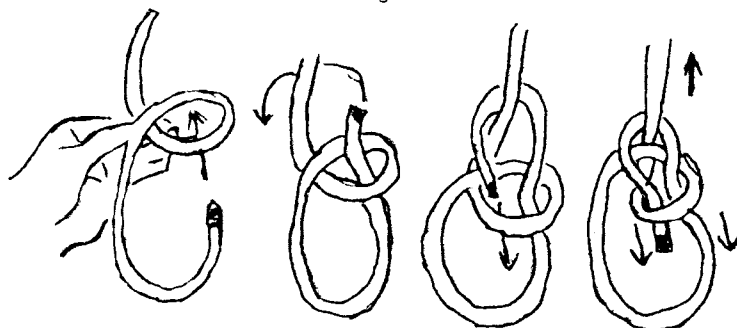
1. Take a rope end in each hand.
2. Cross the right hand end over the left hand rope. Bend it back under, then forward and up. The ends will change hands.
3. Cross the end now in your left hand over, back, under and forward of the end now in your right hand. The short ends should lie flat beside the long pieces of rope.
4. Pull tight.



BOWLINE:

Use it: To make a loop that will not slip - for hanging things or for lifesaving.

1. Lay long end of rope in your left hand. With your right hand make a little loop in the rope just where you want the knot to be. The loop must go over the long part of rope. Hold loop in place with your left hand and let the end hang down in front.
2. With your right hand take short end and push it up through the little loop. Now you have another loop. Pull the end until this big loop is the size you want to have when you are finished.
3. Pass this end around behind long part of rope and then down through little loop again.
4. Hold long part of rope with your left hand. Hold short end and right side of the big loop with your right. Pull with both hands to tighten.



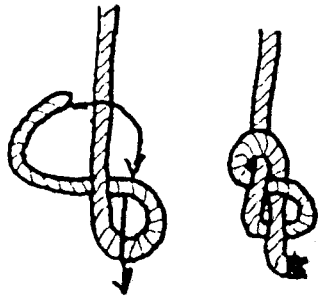
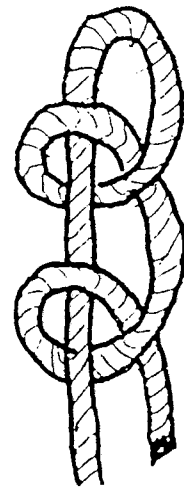
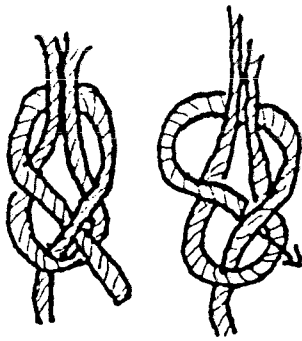


Figure Eight

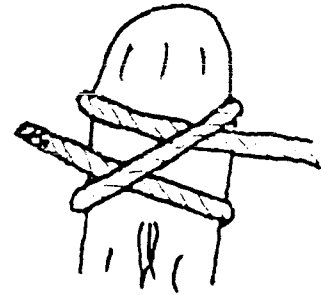
This is normally used as a stopper knot to keep the line from going through a block or tie.



half hitch
with a multitude of uses.

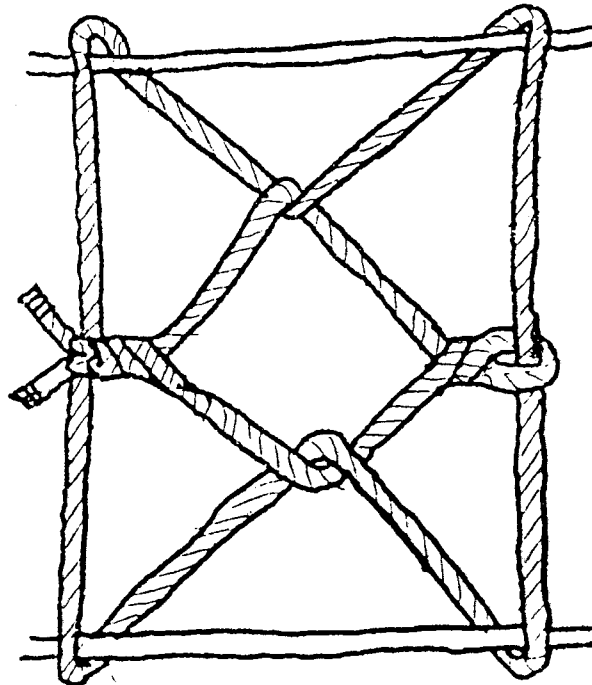


the sheet bend,
a good knot to use when different size
lines must be joined.



the clove hitch,

it works well when you tie up
at a dock or to a tree.



a diamond hitch to tie down your cargo or gear.
Using the thwarts it forms a large mesh net to keep your load in the canoe.

CANOES

For thousands of years, man has used rafts and boats. Boats have been made of just about everything the mind can imagine from steel to balsa wood, animal skins, reeds, tree bark and paper.

Can you imagine a boat made of chemicals? Today there are fiberglass and polyvinyl Chloride boats, canoes and rafts.

The canoe is a displacement hull, as is an oceanliner. Compare this to the first cousin of the canoe, the catamaran, which in common with the speed boats, has a planing hull.

Figure 1 shows the standard or average roundness of the canoe hull as seen from the front. This has a standard keel and is quite stable.

Figure 2 shows rounded hull used for racing and white water because of its sleek shape and no keel. Good balance is needed on this one.

Figure 3 is a freight hull. Notice how flat the bottom is and how straight the sides are. Some freight canoes are as much as 65 feet long and can carry over a ton.

Figure 4 shows a covered deck as is used on kayaks and white water. This is a very fast hull and can survive high winds and waves.

Figure 5. This is a front view of a standard canoe. Note that the stemband in this drawing is quite high compared to today's canoes, but much lower than that of the Indian Birch Bark canoe. Today canoes have a lower end profile to cut down on wind effect.

Figure 6 shows a 3/4 view with the parts labeled. This figure displays the three thwarts; some canoes have more or less, depending on the canoe.

STANDARD OR AVERAGE
ROUNDNESS TO BOTTOM

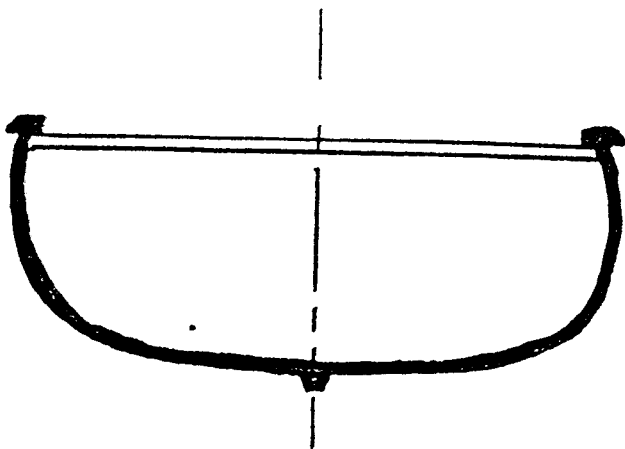


FIG 1

FAST AND TIPPY
DEEP AND ROUND
NO KEEL - GOOD FOR
WHITewater

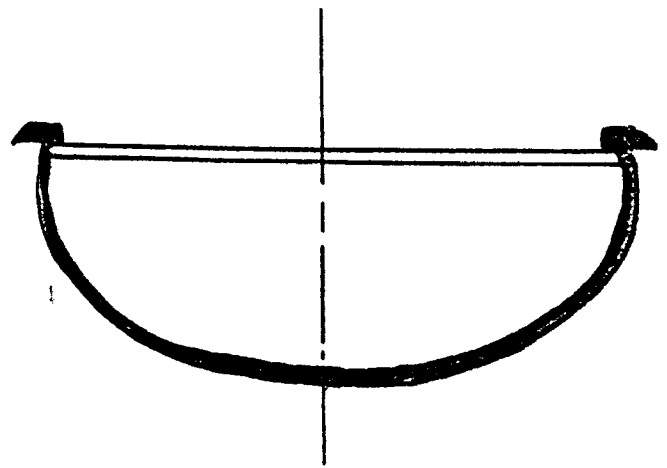


FIG 2

Profiles - - Round vs. flat-bottomed canoes.

FULLY DECKED
RACING CANOE OR KAYAK HULL
SHAPE

FLAT FREIGHT

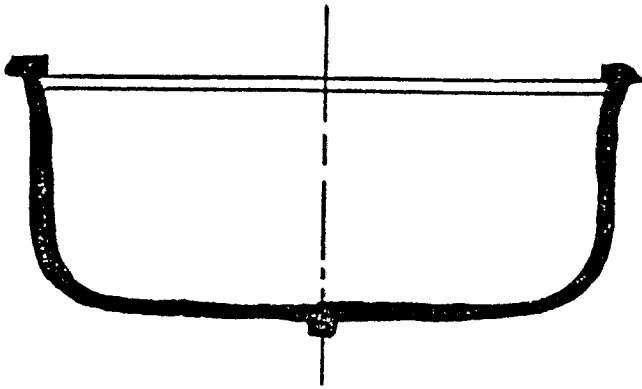


FIG 3

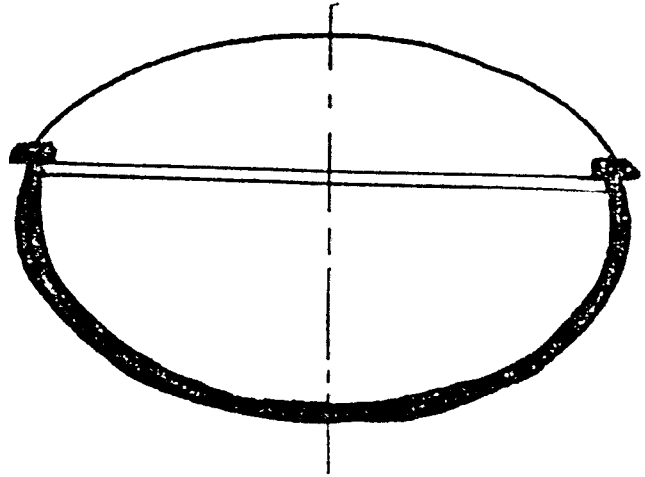
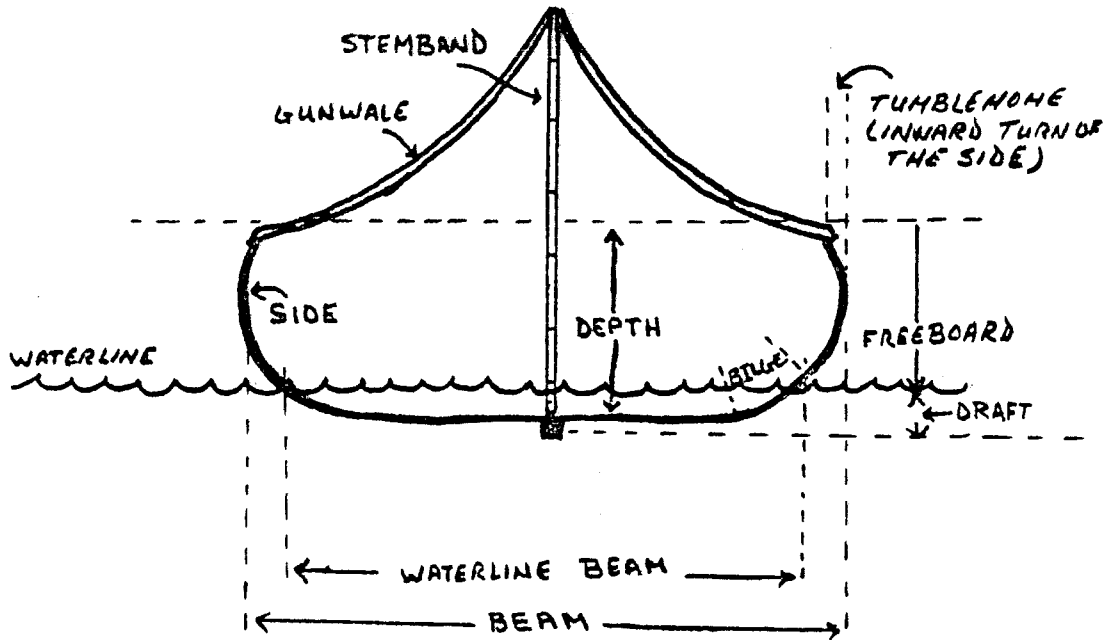


FIG 4



Canoe features and nomenclature

FIG 5

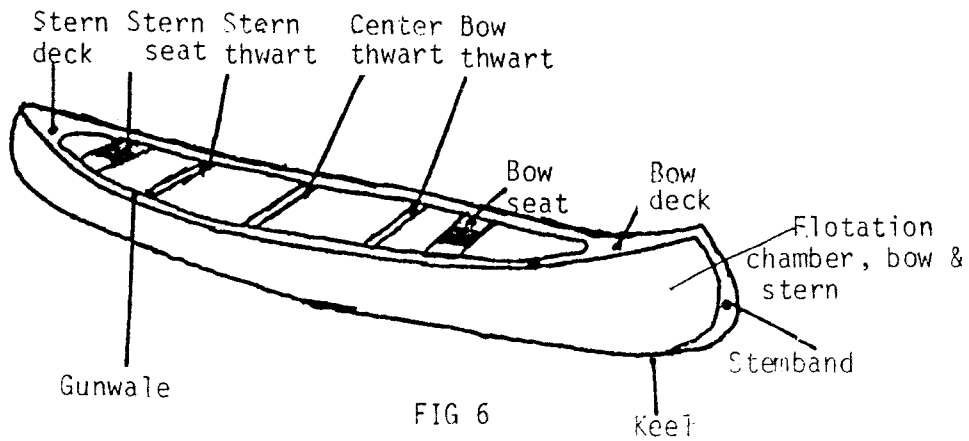


FIG 6

PADDLES (Styles and Care)

Figure 7. Canoe paddles differ widely in size, shape and material, depending on the maker and user.

If you are serious about canoeing, you may want to have your own paddles the same way as your own bowling ball or tennis racket is the one you can use to the best advantage.

Regardless of the size, shape or what they are made of, all paddles should be treated with care. Paddles should never be used as a prybar or used to push off from a rocky beach or shore.

Most wooden paddles will, with time, become feathered on the end of the blade. This should be corrected as soon as possible by trimming with a sharp knife and then sandpaper.

The different widths of paddles make a difference in the amount of 'push' given the canoe. If two people are paddling the sternman should use the widest paddle.

The paddle consists of the grip, shaft, throat, blade, and blade tip. Except for specialized canoeing (racing, whitewater, etc.) the grip and shaft length are the most critical. The length should be determined by the individual's arm length, strength and comfort. The grip should be comfortable. If you have small hands, use a thin grip, for large hands a thicker grip.

Originally, paddles were all made of wood, but now they can be found made of wood, metal, fiberglass and plastic.

After experimenting with some different paddles of various lengths, widths, and materials, the canoeist will be able to judge which paddle is best suited to his or her use, size and strength.

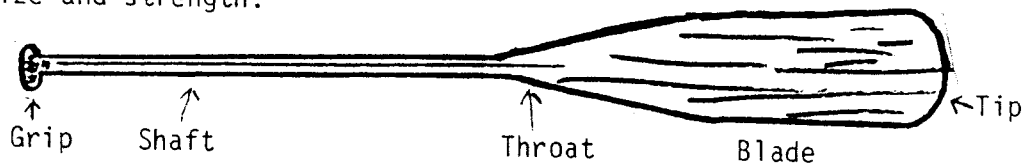
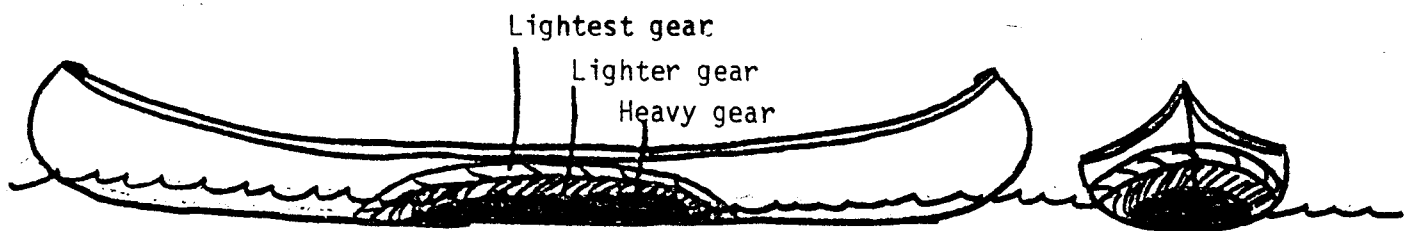


Fig. 7

SAFETY

There is never a time to "Tease the Princess of the Boating Kingdom". The canoe can be fickle and unforgiving when mishandled or used in conditions beyond the design of the craft.

In the canoe, the center of stability is below the thwarts. Loading as shown is recommended. Canoeers never stand in a boat. Kneeling is the best position for paddling.



Other than load balance and security, there are other safety precautions that should be taken into consideration before any trip or even a short ride in a canoe.

The first of these is "Watch the weather". If there is very much wind, over 10 MPH, then the beginning canoeist should stay ashore. If you are on the water, try to get ashore as quickly as you can or at least get to a sheltered cove.

The second is to know the basic swimming strokes and be able to use them fully clothed.

Third is your Personal Flotation devices (life jackets and cushions). Be sure they are in good condition, fit and are readily available. These are required by law.

Be aware of the water temperature. Remember that even if the air temperature is in the 80's, the water, if it is from a mountain stream, can be down to 33°F.

Being dumped in cold water may cause hypothermia (lowering of the body temperature) and survival time is between 15 and 45 minutes. Higher water temperatures increase survival time. In 80 degree water you can survive indefinitely.

The load or cargo weight that you are going to put in the canoe has to be considered. Each canoe has a data plate attached to the hull which states the maximum load or number of persons for that craft. If this data plate is missing or cannot be read, then use the rule of having at least 6 inches of freeboard. This is the distance from the waterline to the gunwale at the lowest point.

NEVER OVERLOAD!!!!!!!!!!!! This is the most common cause of boating accidents. After all the pre-trip preparations have been made there are some more safety precautions one must observe. Until you become familiar, through practice, with canoeing and the paddling techniques avoid white water (rapids or whitecap waves) whenever possible. Even on a calm lake it is advisable that the novice canoeist follow the shoreline rather than cut across large open expanses of water.

Upsetting or swamping a canoe is one of the more common happenings so be prepared to help another canoeist or help yourself when the situation arises.

A swamped canoe will not sink. Even full of water it will float so hold on to it. You can reenter it by grasping the gunwale and sliding into it and handpaddling to safety. This is probably the best method in heavy waves. If you try to empty it in high waves there is as much water going in as you get out.

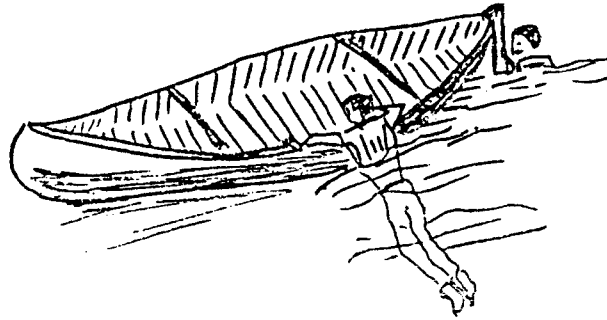
To empty a swamped canoe in calm or small wave water go to either end and grasp the end. A quick push away from you, press down hard and let up. Repeat this until the canoe rides high in the water. Then go to the side, grasp the gunwale at the lowest point and repeat the motion. The water will slosh out by its own motion.

To get back into the canoe after it is empty proceed as shown.

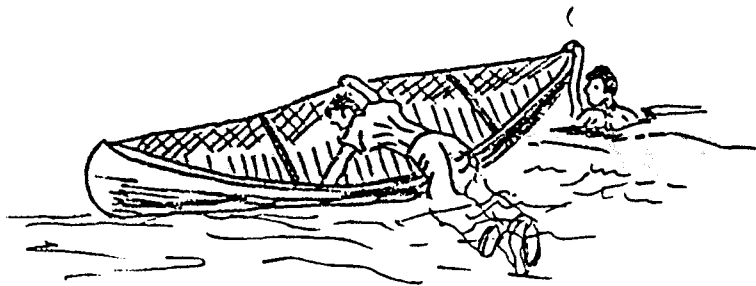
To help another canoeist who has a swamped canoe, pull to one end of the swamped canoe, turn it bottom side up, slide it across the gunwale of the floating canoe, turn it over and slide it back into the water. Then hold it steady while the other canoeist gets aboard.



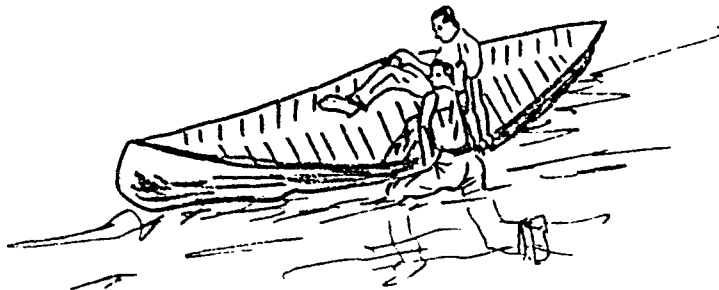
Surviving a capsize in open water, two canoeists.
Step 1 - Return to canoe, empty most of water
by rocking it.



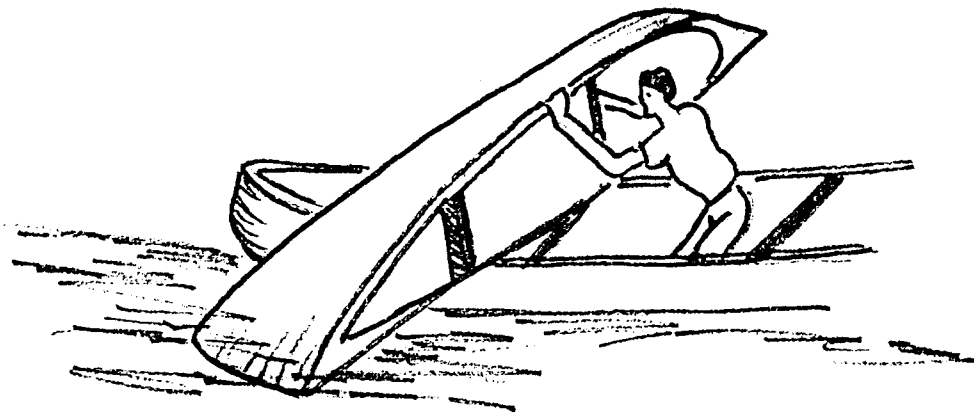
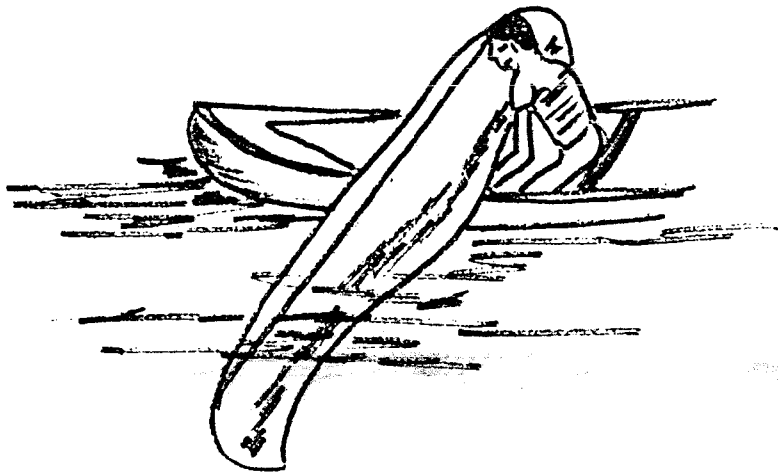
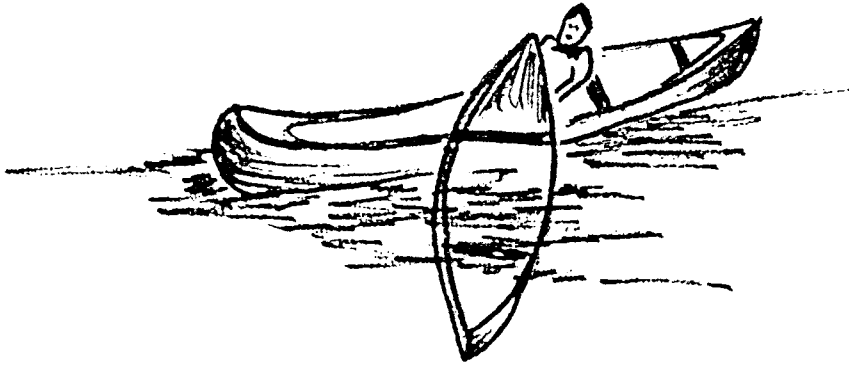
Step 2 - While one steadies bow (or Stern), other canoeist
prepares to scramble aboard.



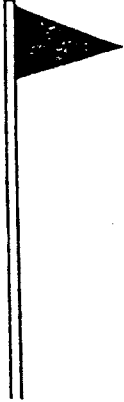



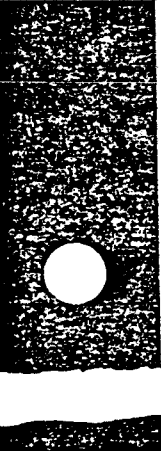


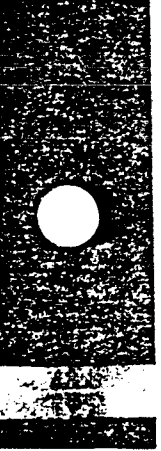
Step 3 - Kicking water to raise his feet and grasping
the opposite gunwale, the one canoeist works aboard.



LAST STEP - The canoeist aboard now shifts his
weight to stabilize canoe while his partner
scrambles aboard.



WEATHER WARNINGS

<p>DAYTIME SIGNALS</p>				
<p>NIGHT SIGNALS</p>	 <p>SMALL CRAFT WINDS UP TO 38 MPH</p>	 <p>GALE WINDS UP TO 54 MPH</p>	 <p>STORM WINDS UP TO 72 MPH</p>	 <p>HURRICANE WINDS 72 MPH AND UP</p>

Small Craft Warning: One red pennant displayed by day and a red light over a white light at night to indicate that winds up to 38 miles an hour (33 knots) and/or sea conditions dangerous to small craft operations are forecast for the area.

Gale Warning: Two red pennants displayed by day and a white light above a red light at night to indicate that winds ranging from 39 to 54 miles an hour (34 to 48 knots) are forecast for the area.

Storm Warning: A single square red flag with a black center displayed during daytime and two red lights at night to indicate that winds ranging from 55 to 73 miles an hour (48 to 63 knots) are forecast for the area.

Hurricane Warning: Two square red flags with black centers displayed by day and a white light between two red lights at night to indicate that winds 74 miles an hour (64 knots) and above are forecast for the area.



WEATHER

A basic knowledge and some ability in forecasting the weather is vital. Canoe travel may need to be delayed or completely curtailed by adverse weather conditions. The leader's knowledge of weather conditions helps determine the groups' course of travel or their camp activities. Simple weather forecasting may well begin by observing forming clouds and interpreting the winds.

WEATHER SIGNS:

The important thing is all changes in the weather must come with the wind. If there is no wind, there will be no change in the weather. The wind blows from, not to. A north wind blows from the north to the south. After the wind direction has been determined, look at the sky and compare what you see with the description below.

SUNSET SKIES:

Sunset skies foretell weather for the following day and for this reason their study is most valuable.

Clear weather sky:

Whether the weather at the moment be clear or cloudy, a rosy sky at sunset or at sunrise will bring clear weather the following day.

Good weather sky:

A faint lavender sky, with high blue above the clouds in late afternoon or early morning foretells good weather. This is seldom seen in winter.

Rain warning sky:

A dull Indian-red sky at sunset, or at sunrise, warns of rain within the next 24 hours possibly accompanied by strong winds.

Rain warning:

A sky of dark clouds at sunset against a background of glaring white sunlight is usually the forerunner of rain within 24 hours.

Wind sky:

A golden amber sky foretells of wind, rather than rain. A pale yellow sky warns of coming rain the next day. The same signs prevail at sunset.

MORNING SKIES:

It is possible to determine quite early in the day the weather the day will bring.

Rain warning sky:

A morning sky of dark Indian-red usually brings rain, quite often accompanied by strong winds and in summer months sometimes thunderstorms.

Rain warning sky:

A halo around the sun or a large halo around the moon usually is a sure sign of rain within 12-24 hours.

Weather change:

Foretold by white fleecy clouds. A north to north-east wind brings an overcast sky but no rain for 48 hours. Southeast to southwest winds indicate rain in 24 hours.

Uncertain sky:

A "fish scale" sky with wind from northeast to southwest may bring a short late afternoon rain. Other winds bring no rain. This sky favors good weather.

Rain or snow:

Light gray to black clouds with east to southerly winds indicate heavy rain or snow. North to northeast winds bring light rain; west to north winds no rain.

Rain warning:

Small dark gray clouds usually bring rain by nightfall. If wind is blowing from east to southeast, then rain is fairly certain within 24 hours.

Good weather sky:

A gray sky at sunrise is the forerunner of a day of fair weather. An early morning fog, frost or dew usually is a harbinger of a rainless day.

Fair weather sky:

White fluffy clouds bring good weather for the day.

Strong winds sky:

A sunrise above a bank of clouds indicate the coming of a windy day, but with little chance of rain though possible overcast sky.

FORECASTING BY WIND DIRECTION:

Winds from northeast, east and south bring bad weather.

If it rains in the morning with winds from northeast to south, and the wind begins to shift to western points the rain will soon stop.

If the sky is cloudy and the wind shifts from southwest to southeast or from northwest to northeast then look for a squall.

If the sky is clear and the winds begin to shift back and forth between southeast and southwest bad weather is on the way with rains or squalls.

DANGEROUS WEATHER:

Wind and rain are the main dangers to canoeists. There is usually no wind until the sun has been up for two or three hours. An early start helps avoid wind and rough waters. Even when it is necessary to lay over because of bad weather the water will usually be calm during the hours of the early morning and sunset. These times may be used to cross large bodies of water, especially if it is necessary to travel to return to base camp.

When it is necessary to travel against the wind and in large waves plot your course to meet waves at a quarter angle and not at right angles. Use every possible island, point and headland as a windbreak even if doing so increases the paddling distance. Keep as low as possible in the canoe. Everyone should wear a life preserver regardless of

TECHNIQUES AND PADDLING POSITIONS

In most cases the paddling of a canoe is done from a kneeling position. This allows the canoeist to apply more pressure to the paddle and still maintain a low center of gravity, reducing the chance of upsetting the canoe. It also enables the canoeist to have more control of the paddle in order to make the more difficult strokes. (Strokes make the canoe go where you want it to go.) When using the kneeling position in a canoe, a pad is used to prevent sore knees.

Figure 1 shows the 'J' stroke or basic stroke for forward motion and steering of the canoe.

Figure 2 shows the guide stroke. As you can see, the guide stroke is almost like the 'J' stroke but does not have the definite hook of the 'J' stroke. As you can see, the paddle is rotated at the end of the stroke to an angle where it acts as a rudder.

Figure 3 displays the basic strokes with two canoeists. Note that the Sternman uses about the same type stroke as a guide stroke. While in this figure the Bowman only furnishes power.

Figure 4. A lone canoeist using a stroke that parallels the center line of the hull. This applies power straight ahead.

Figure 5 is a basic stroke in reverse. It is executed parallel to the center line of the canoe.

Figure 6. The Jam stroke is used for stopping. This is done by putting the paddle blade in the water 90° from the direction of motion.

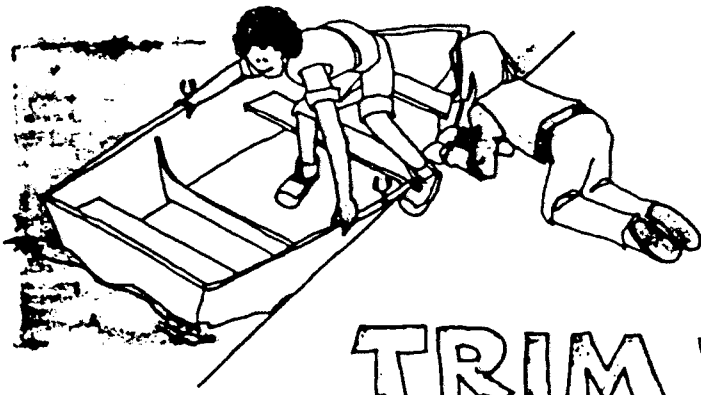
Figure 7. The sweep stroke is used for rapid turn.

Figure 8. This is the push and draw strokes used for docking.

Figure 9 depicts the pull stroke which is also used for quick turns. Use this stroke with caution because you can lose or break a paddle when it's not done correctly.

The last stroke to be mentioned is Skulling. This is primarily a docking stroke and is made like a draw stroke only the paddle motion is in the form of a figure eight.

PADDLING POSITION

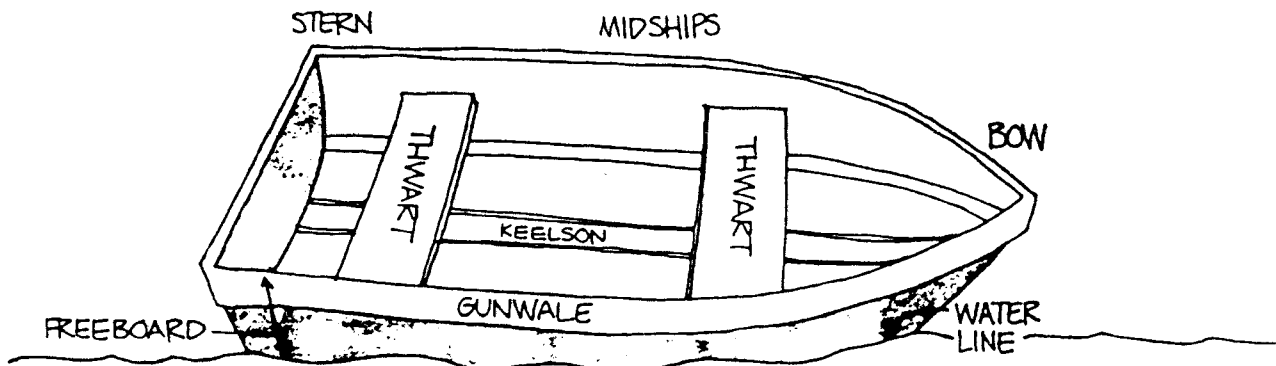


TRIM 'R SWIM

Be a winner!

Practice safe loading and proper trim in small craft!

- Board one person at a time
- Keep hands free. Do not carry gear when boarding
- Hold boat alongside dock (better than over bow or stern)
- Board when boat is afloat (not beached or aground)
- Transfer weight smoothly (not by jumping or lunging)
- Step to center along the keelson (not on thwart or gunwale)
- Stay low, hold on to both gunwales
- Distribute weight evenly (slightly down in the stern)
- Sit on thwart of boat or bottom of canoe (not on gunwale)
- Sit down to pass gear aboard
- Secure loose objects
- Stow PFD's handy to each person (non-swimmers wear PFD's)
- Allow ample freeboard for power and weather
(Motors or sails cause more tilt than oars or paddles)
- Plan moves (don't everybody change at once!)
- Single person alone in a boat:
 - Trim toward midships
 - Avoid bow or stern, especially in a wind
 - Have a buddy ashore or in another boat



THE "J" STROKE, A BASIC STEERING STROKE

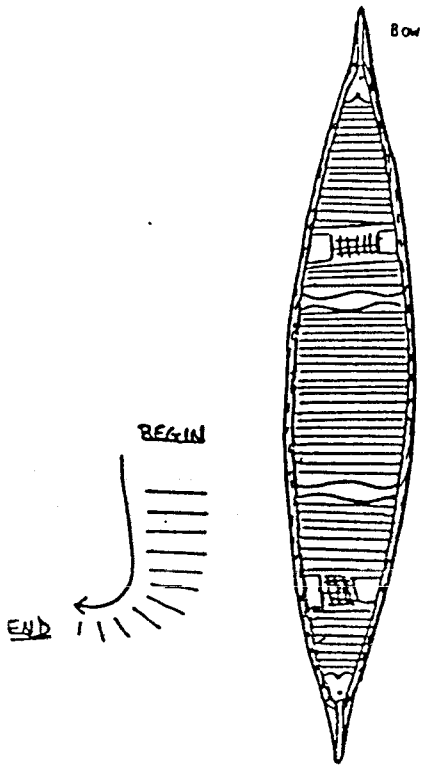


FIG 1

The Guide Stroke

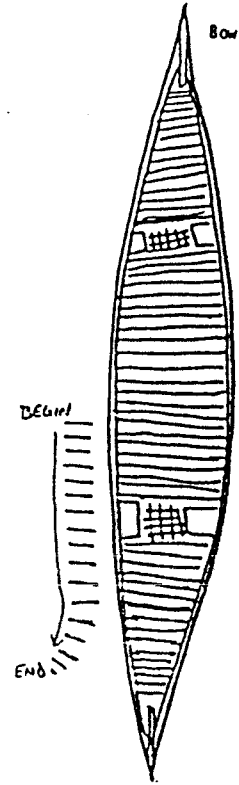


FIG 2

Basic paddling strokes. Correct positions, two canoeists, showing steering twist as executed by stern man.



FIG 3

BASIC STROKES - CANOEIST PADDLING ALONE

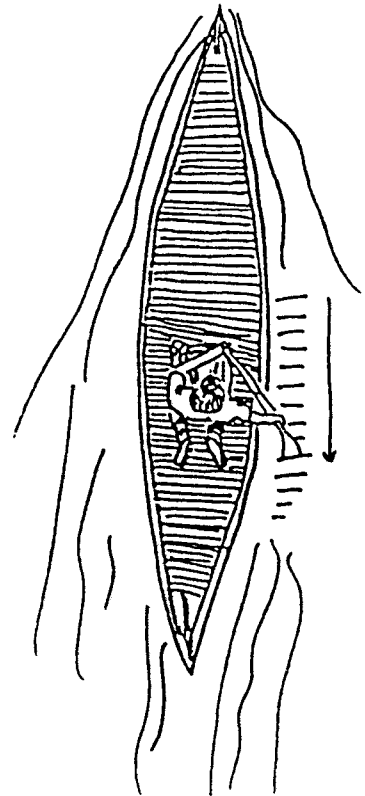


FIG 4

THE BACKING STROKE

THE JAM STROKE

SWEEP STROKES

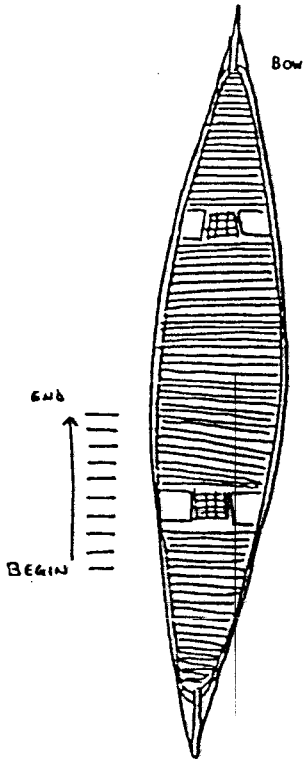


FIG 5

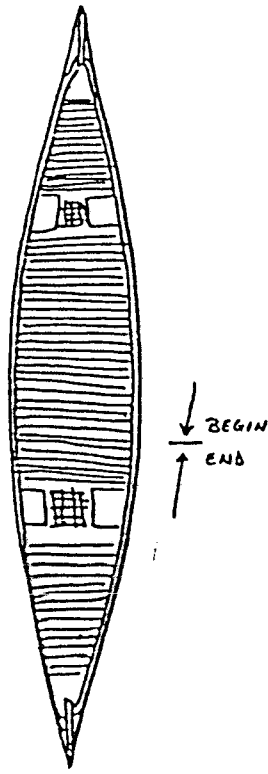


FIG 6

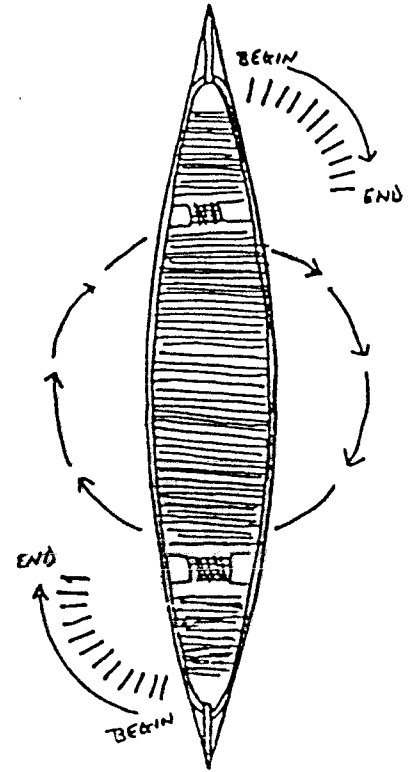


FIG 7

PUSH AND DRAW STROKES

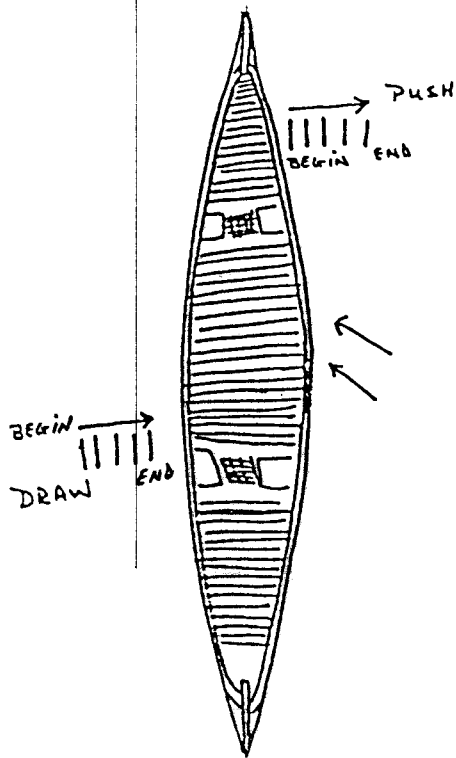


FIG 8

PULL STROKE

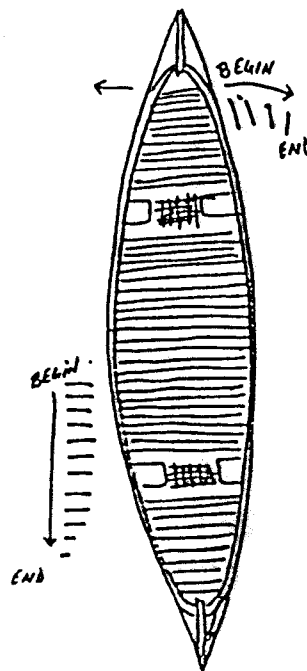


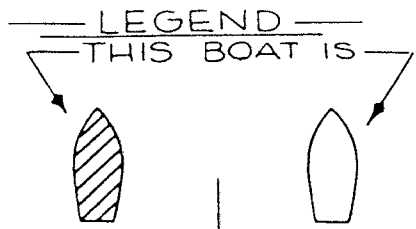
FIG 9

RULES OF THE ROAD



ARIZONA GAME & FISH DEPARTMENT

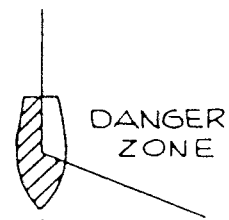
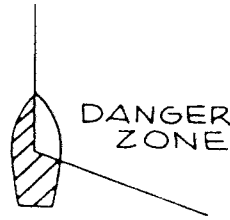
2222 W. Greenway Road
Phoenix, Arizona 85023
(602) 942-3000



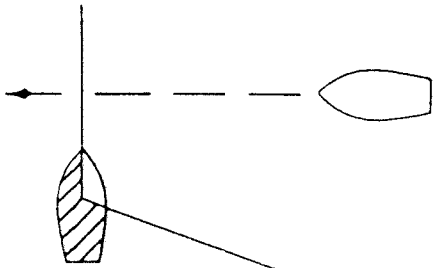
"BURDENED"
MUST YIELD
RIGHT OF
WAY

"PRIVILEGED"
SHOULD HOLD
COURSE AND
SPEED

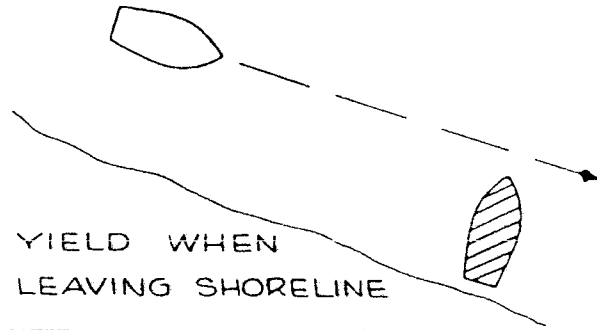
SAME ANGLE
AS STARBOARD
(RIGHT) RUNNING LIGHT
(10-COMPASS POINTS)



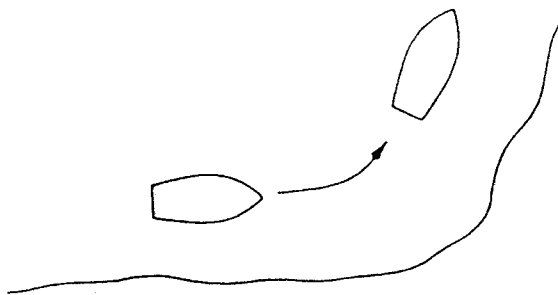
WHEN BACKING
DANGER ZONE REMAINS
IN PATH OF TRAVEL



YIELD TO ALL BOATS
IN YOUR DANGER ZONE



YIELD WHEN
LEAVING SHORELINE

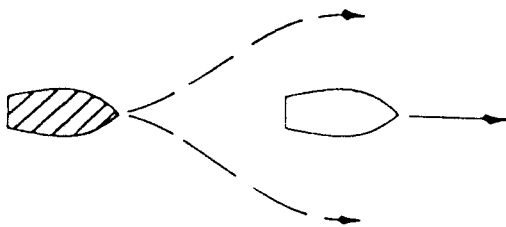


ALL LAKE TRAFFIC IS
COUNTERCLOCKWISE

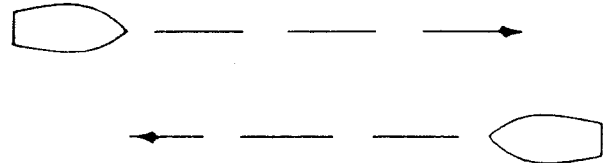
HEAD-ON SITUATION



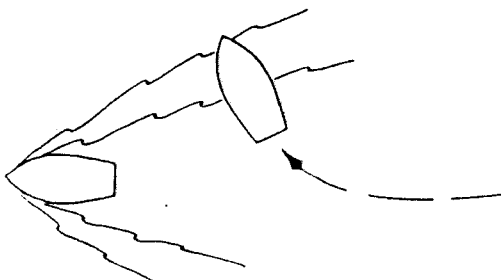
EACH TURNS TO STARBOARD
IF ENOUGH WATER AVAILABLE



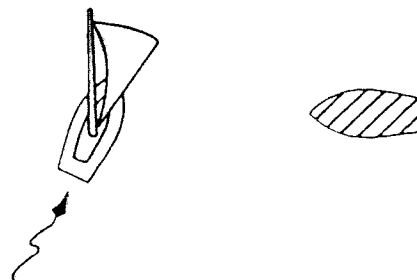
MAY OVERTAKE & PASS ON
EITHER SIDE USING CAUTION



PERMISSIBLE IF ENOUGH
WATER BETWEEN CRAFT



USE THIS METHOD TO CUT
WAKES SAFELY



YIELD TO ALL CRAFT NOT
UNDER POWER

LOOKING FORWARD FROM THE STERN

THIS IS THE PORT SIDE

THIS IS THE STARBOARD SIDE

THE PORT RUNNING LIGHT IS
RED 10-POINT LIGHT

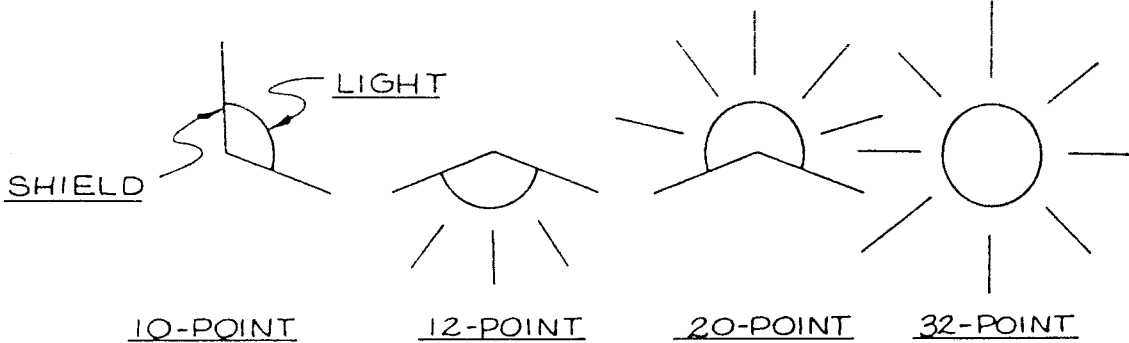
THE STARBOARD RUNNING LIGHT
IS A GREEN 10-POINT LIGHT

THE STERN RUNNING LIGHT IS A WHITE 32-POINT LIGHT

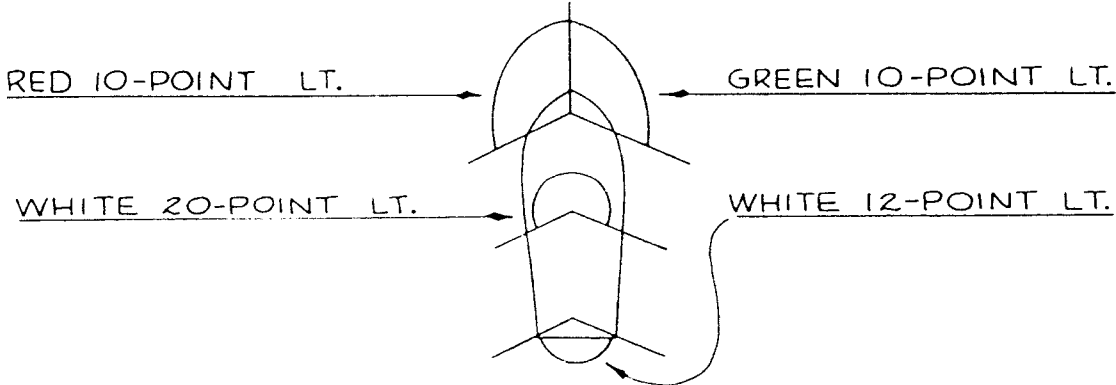


AND IS NOT TO BE OBSTRUCTED BY ANY OBJECTS ON THE CRAFT

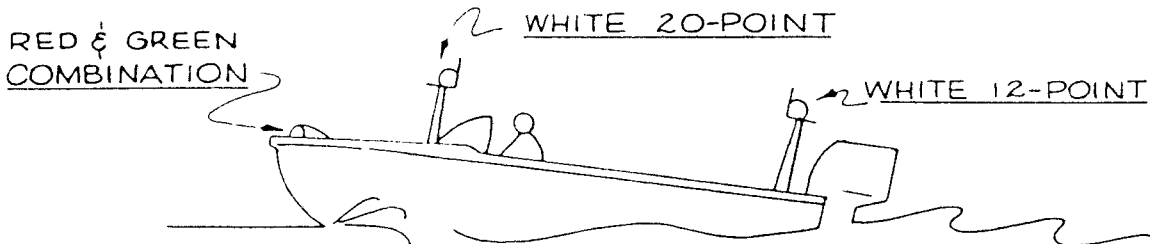
LIGHTS USED ON WATERCRAFT



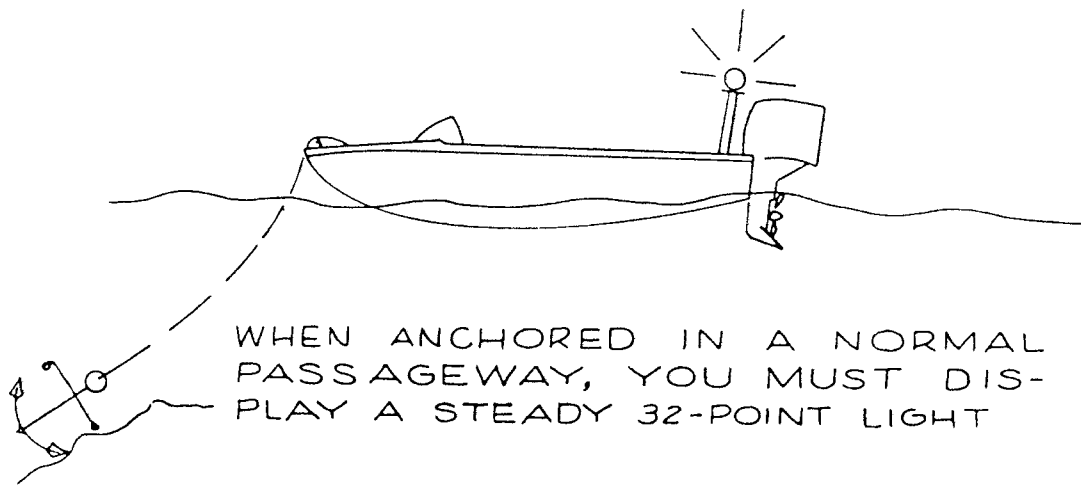
IF YOUR CRAFT IS UNDER 40 FEET & YOU ARE ON WATERS WHERE INTERNATIONAL RULES APPLY (COLORADO RIVER & ITS LAKES) YOU MAY DISPLAY LIGHTS AS SHOWN BELOW



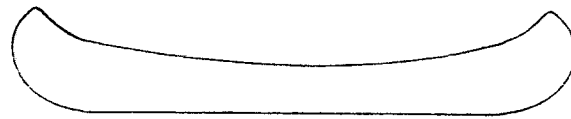
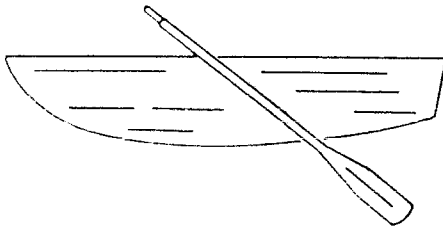
BY SPLITTING THE STERN LIGHT IN THIS MANNER THE GLARE IN THE COCKPIT WILL BE GREATLY REDUCED



THE LIGHTS DESCRIBED HERE CORRESPOND WITH THE 32 - POINTS OF THE COMPASS

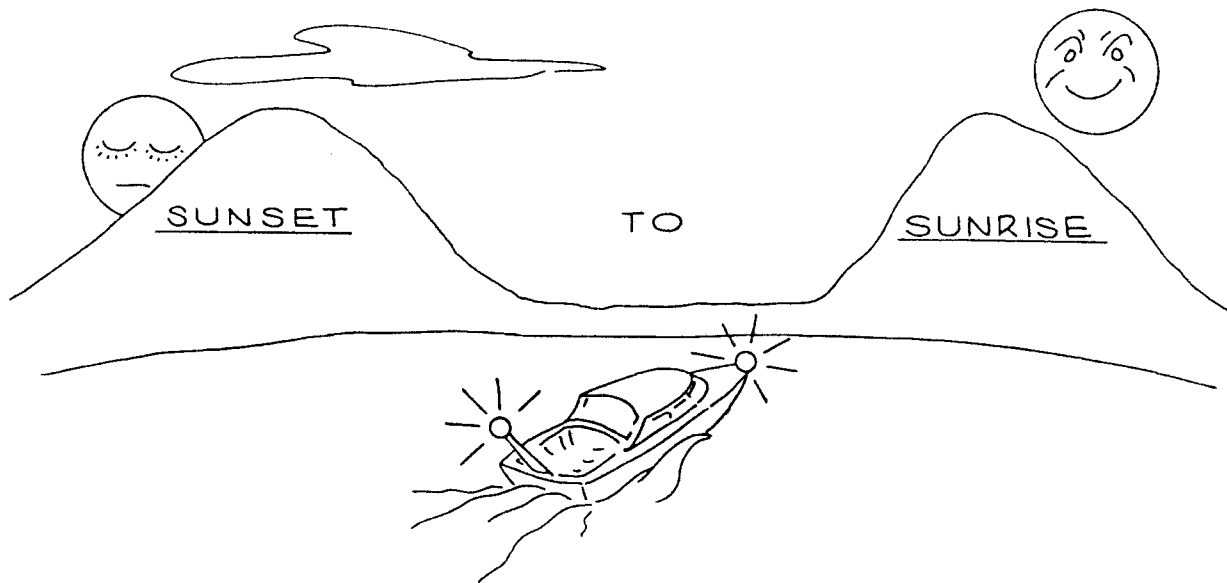


WHEN ANCHORED IN A NORMAL
PASSAGEWAY, YOU MUST DIS-
PLAY A STEADY 32-POINT LIGHT



ROWBOATS AND OTHER CRAFT USED WHERE
POWER-DRIVEN CRAFT ARE PROHIBITED
NEED NOT DISPLAY LIGHTS

WHEN UNDERWAY
LIGHTS MUST BE DISPLAYED FROM



BOATING SAFETY IS NO ACCIDENT
KNOWING THESE SIMPLE RULES WILL ADD TO
YOUR BOATING PLEASURE