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Viewpoint

To Wear or not to Wear



John Simmons
Director
Bureau of Boating
Pennsylvania Fish & Boat Commission

In April, the National Transportation Safety Board (NTSB) released a report on its study of recreational boating safety. This report made several recommendations that could have a lasting effect on the future of recreational boating. How these recommendations will be received in Pennsylvania depends entirely on you.

During its study, the NTSB reviewed U.S. Coast Guard data on recreational boating accidents from 1986 to 1991. In addition, 18 states including Pennsylvania were asked to provide copies of accident investigation reports for all of their fatal boating accidents for 1991. Of the 924 fatalities that occurred nationally, the NTSB studied 407. From its analysis, the Board concluded that a number of efforts to address the causes of fatal boating accidents should be initiated.

Alcohol was found to be a factor in at least 37 percent of fatal boating accidents. As a result, the Board called for chemical testing of all operators involved in boating accidents, clear definitions of legal impairment, and increased enforcement of these alcohol abuse laws. Pennsylvania, which already has a strong alcohol law, was targeted for improvements in measurement and detection of alcohol use and stronger enforcement of current laws.

Another major area identified by the Board for improvement was efforts to increase the number of boat operators attending boating safety classes. The Board found that unlike general aviation and motor vehicle operations, an operator of a recreational boat is not required to demonstrate an understanding of the rules of the road and an ability to operate the boat. Consequently, it has been recommended that all boat operators take, as a minimum, a boating safety class, and preferably, that the licensing of all boat operators be required.

The Commission has been a strong proponent of voluntary boat safety education and has made a tremendous effort to make these classes available and convenient for all boaters. Unfortunately, the number of students still remains terribly low. It has been estimated that over two million people boat each year in Pennsylvania, yet last year less than 10,000 people took advantage of the many classes offered in the state. The Commission has not actively pursued a mandatory education requirement, but unless boaters begin to see the need to become versed in the boating rules and regulations, the possibility for a mandatory requirement remains high.

The third major recommendation was that boaters be required to wear personal flotation devices. It is an easily obtained statistic that most people who drown in boating accidents were not wearing a PFD. The obvious solution to this is to require everyone to wear one at all times. It has been the Commission's position that wearing a PFD is often the prudent thing to do. We have always stressed the need to wear a PFD in small boats, in canoes, on rough or cold water or when the weather threatens. Unfortunately, many people don't always recognize prudence, opting instead for machismo and a tan. Sudden immersion during a capsize and falls overboard—the most common causes of fatalities in Pennsylvania—

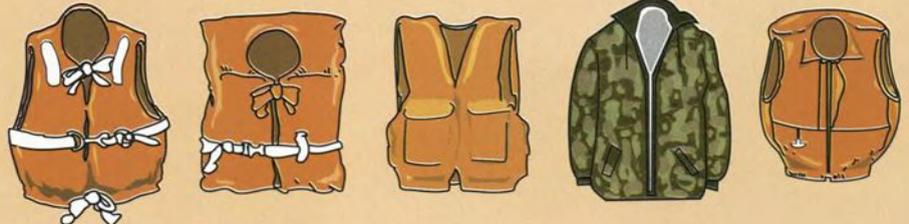


We see parents who won't wear one themselves. Often this results when, after an accident, the child a PFD but the parent died because he insisted that their kids wear a PFD but is just plain stupid and we see the

In an effort to curb the number of drowning fatalities, the Pittsburgh District of the Army Corps of Engineers now requires all boaters in boats less than 16 feet to wear a PFD at all times. We believe that this is an extreme reaction, but we also understand the frustration of the managers as they try to ensure the safety of users of their waterways when those users won't cooperate with voluntary compliance with established safety practices.

The chairman of the National Transportation Safety Board has written to Governor Casey outlining its recommendations. The Commission will consider and respond to the recommendations and either take action or propose alternative compliance measures. If the boaters of Pennsylvania do not want to be required to wear PFDs, to attend mandatory boating safety courses or to obtain a license to enjoy their sport, they must improve their voluntary compliance with safety measures that are known to be life savers.

Take a boating class and use your PFD. The life you save may be your own. Copies of the NTSB study may be purchased from the National Technical Information Service. To purchase this publication, order report number PB93-917001 from: National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161; (703) 487-4600.



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The covers

This issue's wraparound cover, photographed by Tom King, shows two boaters enjoying pull toys. If you enjoy pull toys or water skiing, the lowdown on pages 25 and 30 will interest you for ideas on where to rev up your motor and enjoy a ride. Paddlers will want to check out the details in the articles on paddling the lower Yough on page 6, the canoe IQ test on page 16, and canoeing basics on page 22. Do you boat with kids—even infants? Please read the vital information beginning on page 4. Whatever kind of powerboat you own, read the money-saving ideas on page 14, and if you're looking for a rig that can operate in literally inches of water, see page 28. Finally, on page 10 you will find everything you need to know about equipping your boat with a cellular phone.

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Choosing Life Jackets



Pennsylvania law requires that children under age 9 and nonswimmers wear life jackets on Fish and Boat Commission and state park waters.

According to the U.S. Coast Guard, over 80 percent of boating fatalities in this country involve people not wearing their life jackets, or personal flotation devices (PFDs). Last year in Pennsylvania, 17 people died in boating accidents. Thirteen of the 17 victims were not wearing PFDs. The American Pediatrics Society lists drowning as the number one cause of child death. The Society also states that children under seven cannot put on a life jacket by themselves. Children between 7 and 12 cannot arrange tasks without formal training. Do you need a better reason to make your child wear a life jacket or register the youngster in a safe boating course especially designed for children?

Watching infants and toddlers in boats or playing around water while wearing no life jacket is a scary sight. Even scarier is watching these youngsters wearing no life jackets in boats. Once I even saw parents paddling their canoe on a fast-moving river with an infant lying on the bottom of the boat. The only PFDs I saw were seat cushions. What a tragic scene this could have been.

In August 1990, such a tragedy occurred on the Schuylkill River. A 45-year-old man and his 4-year-old daughter lost their lives when their 17-foot canoe capsized. There were a total of seven people on board the canoe—four of which were children. The canoe capsized. The father disappeared from view after diving under the surface to search for his missing daughter. There was only one life jacket on board.

If the entire family had worn PFDs, this tragedy could have been prevented. If you knew you were going to have a boating accident, you would make sure you and your children were wearing PFDs. Unfortunately, water is unpredictable and no one can foretell the future. That's why it's important to wear a life jacket at all times. It's your best insurance policy.

Pennsylvania law requires that children under age nine and nonswimmers wear life jackets on Fish and Boat Commission and state park waters. The Pittsburgh District Army Corps of Engineers requires life jackets to be worn by everyone in boats under 16 feet and in all canoes. It is a good idea for everyone to wear a life jacket but at least make sure your children wear them.

for Young Boaters

by Cheryl Hornung

Sizes

PFDs are sized by weight, although some manufacturers additionally specify a chest size. In this case, children should be measured around the chest and under the arms before trying on the jacket.

There are three sizes within weight ranges for your child. The smallest size is designated for an infant less than 30 pounds. The age group this model targets is newborn to approximately 2 years old. The recommended chest circumference is 16 to 20 inches. Because a child this age has a larger head, rounded body and shorter limbs, this infant life jacket features extra flotation around the infant's head to keep the child floating face-up. These jackets often have grab loops on the collar for parents to grab to pull a tottering infant back to safety. Many also have crotch straps to help keep the jacket on.

The next size range is for children weighing 30 to 50 pounds. This is called a child's small or medium. The child's size small targets ages 2 through 5. The child at this age still has a short torso and stocky shape, so this device also provides more flotation around the head. It often has the grab loop on the collar. The chest circumference sizes range from 20 to 23 inches or 23 to 25 inches.

The child's size medium is designed for children between the ages of 4 and 8 with chest circumferences of 21 to 25 inches. These children usually have a longer torso than a toddler and are often slimmer.

The last child's device is for youngsters weighing 50 to 90 pounds. The chest circumference is 26 to 29 inches. This targets children 6 to 12 years old. If your child weighs over 90 pounds or has a chest measurement over 29 inches, the child is now ready for the next size up—an adult size small.

Snug fit

When you check the life jacket for the size appropriate for your child, please keep these following tips in mind. Fasten the life jacket snugly. Pull up on the jacket and see if you can pull it up over your child's head. The jacket should not rise more than a few inches. If it does, the life jacket is too big. If the jacket has crotch straps, they should



Children between ages 7 and 12 cannot arrange tasks without formal training. Do you need a better reason to make your child wear a life jacket or register the youngster in a safe boating course especially designed for children?

be used at all times. They help keep the life jacket in place. Most smaller-sized jackets are equipped with crotch straps.

Purchase your child a highly visible life jacket. Bright colors can be seen from a distance. Attractive, colorful jackets are more likely to be worn. Many come with your child's favorite cartoon characters on the front. Collars and grab loops are also practical additions for children's life jackets.

Practice swimming with your child while wearing life jackets. Everyone should feel comfortable in them. Remember that children learn by example, so wear your life jacket. As soon as your children get in the boat, they should put on the life jackets, just like they buckle up when getting into your vehicle.

Remember that the purpose of a life jacket is to hold a person's head above water so the person can breathe. The reason for you and your children to wear them should be easy to justify—they could save your life! Wear your life jacket— it won't let you down.

Life Jackets Save Lives

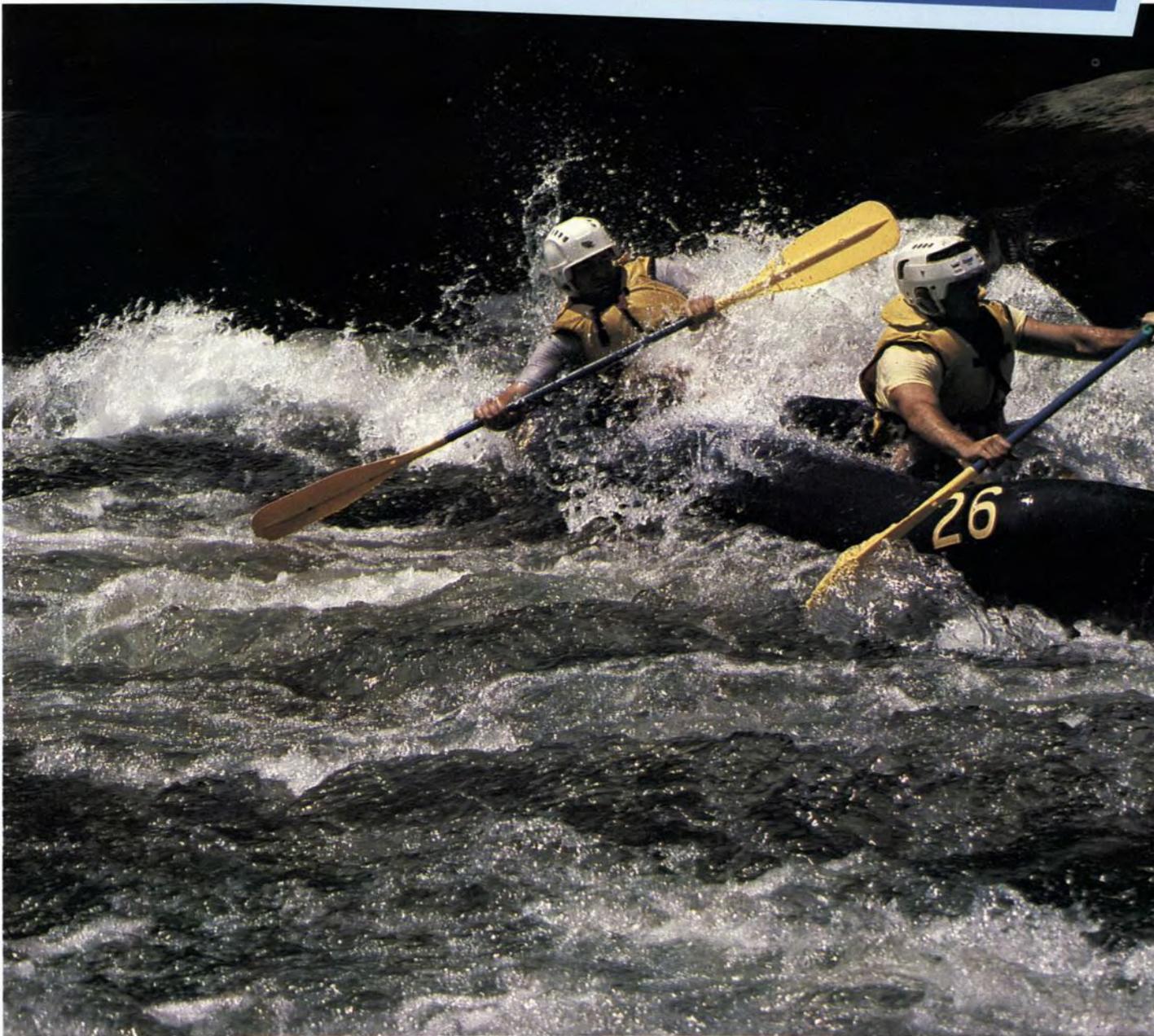
A man's faith in PFDs was reaffirmed during an August fishing trip with his wife and three-year-old son. "It seemed almost cruel to insist he (the child) wear his life jacket on such a warm calm day," the man said, "especially since my 10-foot boat was very stable and we never had any problems in the past. But out of habit as much as anything, on went his vest.

"My wife and I were fishing off the right side of the boat when we were startled by a big splash off the left side. We turned just in time to see our wide-eyed three-year-old bob to the surface. We easily pulled the frightened boy back into the boat."

Now they can talk about the incident and laugh, "but you can be sure that PFDs are now always worn in our boat."—CH.

Whitewater Drummer

by Kevin O'Brien



Route 381 winds through the Laurel Mountains of western Pennsylvania, bisecting the tiny town of Ohiopyle along the way. Dropping out of the mountains, entering town and the surrounding state park in either direction offers superb views of the Youghiogheny River and the rapids that have made this area famous. Ohiopyle *means* whitewater.

Passing beneath the 381 bridge, the river springs to life, dancing down a series of rapids and plummeting over a spectacular 20-foot waterfall in the heart of town. Below this falls begins the 7 1/2-mile section of the river known in paddling circles as "the Lower Yough," or simply, "the Lower," one of the nation's most famous and popular whitewater runs.

The history of whitewater sport on the Lower Yough began with a few exploratory descents in rafts and canoes in the late 1950s. By 1963 the first commercial rafting outfitter had set up shop and was soon followed by three competitors. That same year Ohiopyle State Park was formed. Visitors began flocking in to enjoy both,

and the sleepy little town has never been the same since.

Historians disagree on the meaning of the Indian word *Youghiogheny*. One translation is "river that flows in a round about course" and another, "rapidly flowing stream." In terms of the Lower Yough the debate is pointless—both phrases are more than accurate.

Whitewater rapids are rated on a difficulty scale of one to six. Classes I and II consist of gentle current and waves. At the other end of the scale Classes V and VI denote extremely turbulent, difficult whitewater. The rapids of the Lower Yough are in the mid-range: predominantly Class III, with a few Class IV moves at higher water levels. Moderate difficulty, short rapids alternating with calm recovery pools, makes the Lower an ideal section of river for a person's first whitewater adventure.

The first 1.7 miles of the Lower Yough drop 60 feet flowing around horseshoe-shaped Ferncliff peninsula. Known as "the Loop," this stretch contains seven challenging rapids with the unique feature of the put-in and take-out points separated by a mere quarter-mile of land. Paddlers running only the Loop can make continuous runs without the need for a shuttle vehicle! The ease of logistics makes this an ideal late-afternoon run.

The six miles below the Loop contain the Lower Yough's most notorious rapids—Dimple, Double Hydraulic and Rivers End, among others—and most paddlers prefer to do the entire trip down to the state park's take-out at Bruner Run.

Ohiopyle is a fitting name for a town synonymous with whitewater. Derived from the Indian word "Ohiophehele," it means "white, frothing water." Tens of thousands of people descend on the town and the state park every season looking for just that, and the local river outfitters offer a variety of equipment and services to make the most of an exciting day on the river.

Rafting trips

Guided rafting trips on the lower Yough provide an excellent introduction to whitewater for the beginning paddler. Ohiopyle's original four outfitters remain the only companies licensed by the state park to run guided commercial trips.

On guided trips, outfitters cater to their clients' every need. The price of a trip includes transportation to and from the river (parking is located at their information booths just outside of town), equipment—rafts, paddles and life jackets—a riverside lunch, and last but certainly not least, experienced river guides.

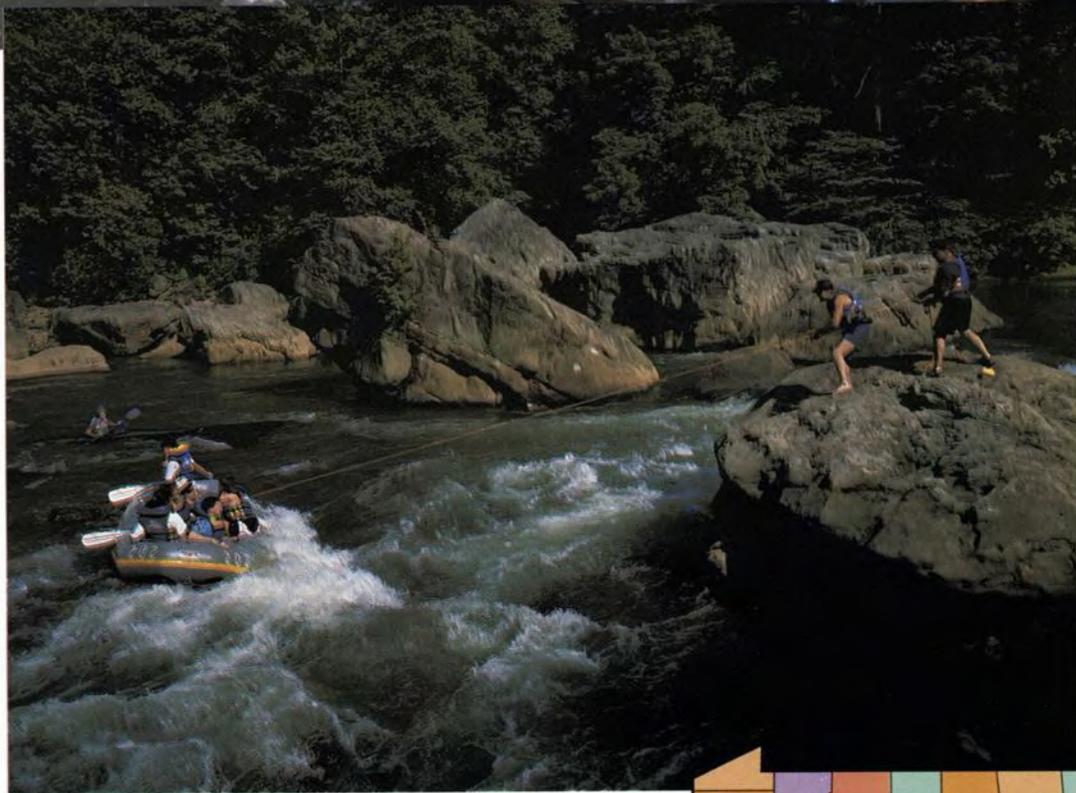
Following the morning's check-in and shuttle bus to town, rafters assemble above the put-in, just below the falls. Equipment is handed out by the guides and the trip leader delivers a brief lecture on the fine points of whitewater rafting. (His talk includes several important safety tips. Don't sleep through it!)

Most commercial whitewater trips feature a guide in every raft barking out commands from the stern. The Youghiogheny's alternating Class III gradient and mellow recovery pools allow a more challenging trip format. Clients paddle on their own in four- or six-man rafts, appointing a "captain" from their ranks in each raft to call the shots. Four guides—two in rafts, two in kayaks—accompany the trip and shepherd the rafts down the river—one guide in the lead, one at the tail while the other two position themselves in between, pointing out the best channels and keeping an eye on the mayhem!

River levels depend on releases from Youghiogheny Dam, 15 miles upstream, and remain fairly constant throughout the summer season. The four-guide-per-trip format is used on levels up to four feet on the put-in gauge. At higher levels, usually in the spring,

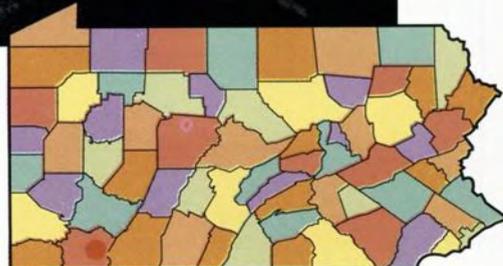


Photo-Kathie O'Brien



photos-Kenn O'Brien

*Midweek trips are a bargain.
They are less hectic and outfitters
offer cheaper rates.*



Guided rafting trips on the lower Yough provide an excellent introduction to whitewater for the beginning paddler.

the rapids increase to Class IV difficulty and the outfitters switch to larger rafts with a guide in each.

River guides working the Lower Yough are an eclectic lot; fulltime, hard-core "river rats," college students with summers to burn and weekend warriors blowing off steam from their midweek 9 to 5's. First Aid, CPR and river rescue training are all part of a guide's repertoire. They know the trouble spots in rapids and get plenty of practice pulling rafts off rocks, retrieving stray paddles and rescuing involuntary swimmers. During the course of a trip they rally the rafts above the major rapids, point out the best way to run them and set up safety ropes below—just in case!

In addition to running more than a dozen adrenaline-pumping rapids, a day on the Lower includes soaking up sun and scenery, inevitable splash battles between rafts, an organized float through Swimmers Rapid and welcome stop, at about the half point, for a riverside lunch.

The legendary "Yough lunches" have changed little in 30 years—deli meats, cheeses, apples, cookies and the compulsory PBJ. Hardly a gourmand's feast, but a welcome refreshment and break after several miles of vigorous paddling. Strict vegetarians or those persons with special dietary needs can bring their own food and have it packed along before departing.

Depending on the water level, guided raft trips on average last about four hours on the river. The time goes fast, but a hard day of whitewater play takes its toll and most passengers arrive at the take-out soaked and tired, but nonetheless happy. Carry the boats up the hill, load the shuttle buses and it's back to Ohio. Pyle.

A 20-minute bus ride back to the parking lot, a dry change of clothes, a cold drink and the action begins again. Crowds gather at the outfitter's booths to watch highlights of the day's thrills captured on video, sift through the display of 8x10 glossies taken by the local photo service and decide which T-shirts to take home to the unfortunate ones who missed the trip.

Guided raft trips are geared toward novice paddlers and families willing to pay a premium price for a day of whitewater rafting with the maximum in safety and the minimum in logistics and hassles. Rafting has become big business and on busy weekends the river can get crowded to a point that it's hard to know where the rafting ends and the carnival begins. Midweek trips are a bargain: less hectic and outfitters offer cheaper rates!

With experience some paddlers begin craving more challenging forms of whitewater cruising. Veterans of the Lower Yough and other whitewater runs often seek a slower paced, more personal way to enjoy the river.

Rental rafts

Rental rafts are available from all of Ohio. Pyle's outfitters and provide an economical, adventurous alternative for experienced rafters.

Rentals are permitted on the river at normal summer levels (up to four feet on the put-in gauge). Paddles, life jackets and optional helmets are included, but in addition rafters need to purchase shuttle tickets and reserve a launch time with the state park. Reservations for launch times can be made by phone. A certain number are available on a first-come basis, but these go quickly on weekends.

Renting equipment and paddling at one's own pace allows time to appreciate the natural river environment. Hiking to hidden waterfalls, unlimited time for lunch and sunbathing on rocks, and watching the action at notorious rapids such as Dimple or Double Hydraulics are just a few of the benefits of being on your own.

And those are key words—*on your own*. The outfitters renting equipment assume that customers are aware of river hazards and know what they're doing, holding them responsible for any equipment damaged or lost. More importantly, they assume renters can handle emergencies themselves, should they arise.

Rafts are stable, user-friendly craft and can lead to an unwaranted feeling of competence on the part of a beginner. Whitewater, on the other hand, is a dynamic, powerful force of nature and can be unforgiving of foolish mistakes. Should a problem arise—be it a pinned or flipped raft or an injury—experience in handling such situations can mean the difference between a minor mishap and tragedy. Nearby river guides will lend a hand in most cases, but are under no obligation to do so. The safety of their clients is always their first concern. Evaluating one's own skills is a prerequisite to renting any whitewater craft.

Inflatable kayaks

Inflatable kayaks, affectionately known as "ducks," are ideal for those paddlers seeking to push the needle on their whitewater fun-meter a few pegs higher.

Ducks are a hybrid craft—combining the stability of an inflatable with the sleek lines of a kayak. The result is a responsive, playful boat forgiving enough for the novice, but much more maneuverable than a raft. Ducks are available in one-person and two-person designs. The solo versions are easiest to master.

Catching eddies, surfing waves and riding holes are all part of the fun paddling a duck, and playing the river with gusto inevitably leads to an occasional capsize. Self-rescues are somewhat easier than with a raft, but paddlers should be comfortable floating in whitewater and in decent physical condition. Ducks are available in both guided raft trips and on a rental basis, river level permitting.

Kayaks, canoes

Kayaks and canoes are sleek, high-performance craft considered by many to be the ultimate whitewater vehicle. But before climbing into the cockpit, be forewarned—paddling "hard boats" on Class III whitewater takes a considerable amount of skill. Proper instruction is a must for getting into this exciting faction of the sport. Outfitters in Ohio. Pyle offer paddling classes most weekends and Riversport, a paddling school nine miles upstream, offers complete programs.

Whitewater is the lifeblood of Ohio. Pyle and both the outfitters and state park strive to make the Youghiogheny and its rapids accessible to virtually everyone. Physically challenged persons can participate on all guided raft trips, and for those who prefer to view the action from shore, Entrance and Railroad rapids on the loop are easily accessible. In addition, a hike/bike trail parallels the lower six miles of river, providing access to the river all the way to the take-out.



Callin' on

"MA CELL"

by C. W. Mann

"May I talk to mom?" your daughter says curtly as soon as you pick up the phone. It was supposed to be one of those get-away weekends. You took the boat and launched it at your favorite quiet spot along the river bank. At first you wonder why you signed up with "Ma Cell" for a cellular phone; however, since your daughter met Mr. Right you know this is a time for some girl talk.

The FCC has licensed every part of the U.S. for cellular phone service. You can now stay in touch by phone in most any of Pennsylvania's remote places.

Any of the country's 305 metro areas or its 428 rural service areas that don't have service now will soon find new pressure from the government to get their acts together. Coverage areas are filling in. The cellular phone has finally become a perfect communications tool for the weekend boater, or river angler.

Cellular phone history

The first mobile phones were one-frequency systems like the old countryside party lines. Cellular service ended this by setting up more than 800 channels for the companies to use for their subscribers' calls. The concept of cells, or small directional transmit and receive areas, was new. The signals only had to travel to the nearest cell site antenna, and as you moved about, you could change your transmission to a different cell site antenna without losing the connection.

The service will only get better. The latest narrow-band systems allow more calls with less phone company investment, making rural systems economically viable. The latest digital systems allow densely populated metropolises like New York City, or automobile-dominated areas like Los Angeles, to get more calls through in closely spaced cell areas. The latest equipment can get great transmit power with battery drains similar to those of your boat's taillights.

Cellular phones used to be very expensive. The equipment could cost as much as \$5,000 to install and the monthly bills were often in the \$250 to \$500 range. Equipment costs have dropped to as little as \$50, and calling plans are now available that compete favorably with normal land-line phone service. Boaters often had to communicate by get-

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ting a codeless ham radio license, by the very limited citizen band radio, by using satellite-based pager systems, or by using quarter-gobbling pay phones. Today, you can call your boat simply by dialing a 7- or 10-digit regular phone number. The call will be routed through the local phone company to the cellular phone carrier. That carrier will "ring" your phone if it hears you within the range of one of its cell sites.

If you have moved out of range of your home company's transmitters, it can automatically try the adjacent systems or even all the other systems in your state or region. Many systems allow you to program forwarding to other areas when you move into areas the cellular carrier doesn't try automatically. Many systems take messages when you're out of touch, or forward the calls to your land line-based answering machine. You can even tell the system what to do if you are already on another call.

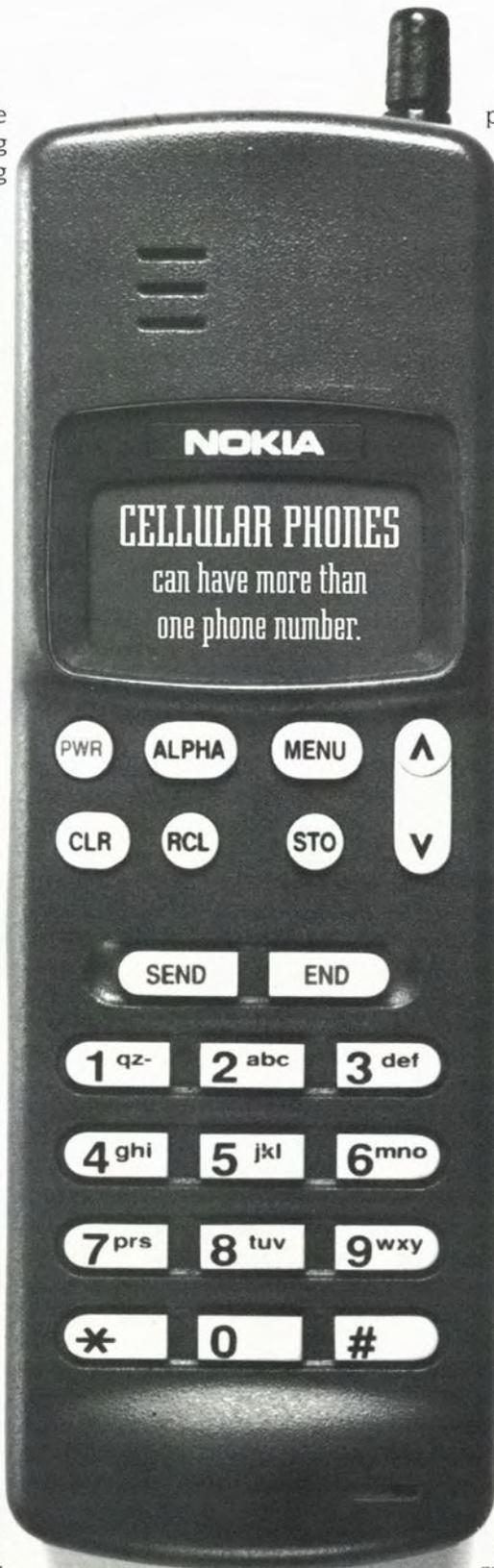
Cellular phones can have more than one phone number. Frequent travelers to a region can have a local number in that region. Vacationers can have a summer number for their friends at home to use. You can even have a private number that only your closest friends can call while you are fishing for the big one.

Latest equipment

The equipment features options are staggering. The brochures of cellular phones list features such as voice-activated dialing, call-in absence light, password security, incoming lock, memory dialing, last number dialed, store and recall restriction, cumulative call timer, last call timer, elapsed call timer, interval tones timer, on-hook dialing, volume/ring adjustment, and modem/FAX/answering machine compatibility.

The service options now available further add to the confusion for a new user. There are features like A Only/B Only, preferred home, preferred ROAM, and home only that deal with your choice of phone company. Other features like 911 dialout permit, system(s) ID only, memory numbers only, selected memory numbers only, auto answer, failed call beep, signal meter, lost call auto redial, or SID override deal with security and life style values for the individual user. To make these shopping choices easier, see the accompanying directory of special cellular terms in the sidebar on page 12-13.

Cellular phones come in four basic types:



The FCC has licensed every part of the U.S. for cellular phone service. You can now stay in touch by phone in most any of Pennsylvania's remote places.

portable, transportable, marine transportables and permanently installed mobile units. If you have a boat you want to equip with a phone, then you should select the transportable marine versions of the cellular phone. Full-timers may want to get the standard permanently installed mobile type phones. They have a large transmitter that can be installed in an out-of-the-way cabinet and a handset that can be installed near the driver's seat.

If you use the boat as a weekend vehicle or second home, you may want to consider either a portable or transportable cellular phone. The portable unit is like that you see on the latest TV shows. It is small and either fits in your pocket or can be easily carried in your hand. Even though it is small and handy, it is less powerful than other types of cellular phones. Portables do not work well if you are on the fringes of a transmission area.

The happy compromise system for the boater is often the transportable. It is small enough to be carried from car or RV and back as needed, yet it has the full three watts of a standard cellular phone. Because these units operate on a 12-volt battery or with a 110-volt battery eliminator/charger, they can be plugged in anywhere in the boat or tow vehicle to keep you fully in touch. Transportables generally come with any combination of features you would want in your craft.

The features you require on a phone vary with your needs, but there are several features you will find worth the money in your boat. If you normally use the boat without a partner, the hands-free answering is essential. If you need to call home to your answering machine or voice mail system, a full DTMF tone keypad is needed.

Memory dialing with an alphanumeric display lets you find Aunt Minnie by her real name. Call-in-absence lets you know when to call back to your answering machine or voice mail system for missed calls. Signal strength indicators let you find the right fishing site with the best cellular signal. If you want to connect an answering machine, FAX or modem to the phone in the craft, you need one that has a RJ-11 jack.

Picking a phone company

The biggest problem in getting a cellular phone is not the equipment. The problem

Some cellular calls within these areas may be cheaper than the regular phone company.

is selecting the right "Ma Cell" company. Until 1995, when the government expects coverage to extend virtually from coast to coast and border to border, you are going to have to select the carrier that provides service to your most important areas of travel. This coverage may be through the direct transmitter coverage you see on their service maps, or through their ROAM agreements with other carriers.

When you have a cellular phone, you want your calls to get through to you wherever you have docked the boat. The simplest arrangement is to have a single phone number that hunts you down at your regular haunts. Ask your potential carrier if they serve these frequent mooring areas with either direct service or ROAM service. Usually, it is wise to pick the one with the best coverage.

If you usually take the boat to a special area for the winter or the summer months, you may want to find a local carrier there. The "Ma Cell" phone company in that area could be either your primary or secondary carrier. Most cellular phone equipment allows at least two carriers to access the phone. This second local phone number can often save you money and give you better coverage.

The company you select can also effect the charges you will pay for service. The structure the FCC has approved is called a duopoly. This means there are two carriers in each area. The original rationale was that this would ensure competition. The reality has been that this assured almost the same rates between the two carriers. If you use more than one area for your service, you may find that a nearby cellular carrier is cheaper than your nearest carrier.

In most states you also find a practice called packaging. When you buy the equipment you find built-in credit from \$200 to \$300 has been subtracted from the manufacturer's suggested retail price. The cellular carrier is, in fact, paying you an up-front fee to sign with their service rather than that of their competitors.

This is not always a good deal. Sometimes the company with the biggest built-in credit is the cellular phone company that does not cover your favorite water haunts.

Also, the packaging sometimes specifies for which plan you must sign to qualify for the credit. Cellular rates are made up of a monthly fee, long distance charges you incur, and airtime charges. Sometimes you pay a higher monthly fee to get a lower airtime rate. Sometimes the airtime rates are different for weekends and evenings. These lower off-peak rates often correspond to those times you would actually use the phone from your boat.

Getting the best deal

Before you sign for a bundled deal, make sure the total rate package of airtime and the monthly fee is the best for your anticipated use. Pay careful attention to the peak and off-peak rate structures. You also should study what your long distance usage will probably total. Often there are no long distance or land line rate charges for calls within the cellular calling area. Some cellular calls within these areas may be cheaper than the regular phone company.

You also should analyze the cost that will be incurred when someone calls you. You may want to make it inexpensive for a loved one or business associate to get in touch.

Sometimes it is better to be able to give advice and save yourself money in the end. Try local phone company call forwarding from your home phone, the new non-boundary 700 area code service or "personal 800 numbers" that some long distance carriers offer. These can bring the call to you by your favorite vacation spot at the lowest possible cost.

Boat install options

Once you have found the equipment and the carrier you want to use, you are left with the boat installation issues. If you select a portable or transportable, you do not have to install the phone itself, but you still need some details taken care of to get the best use of the cellular phone. You should install one or two of the latest portable antenna boosters on the boat windows near where you plan to use the phone.

If you park your boat at a dock for periods longer than a weekend, you should add 12-volt outlets near the area you plan to use the phone. Save the portable or transportable batteries for those periods of relaxation outside. You should not let the phone run off the car battery for long periods. The house battery system usually has more capacity, and it automatically recharges when you plug into city power.

In the future we are likely to see the cellular phone or its higher technology cousins have their own area codes and complete country-wide service. For many of us, however, that future is already here. We can stay in touch while continuing to enjoy the great freedom our boats provide.

Cellular Phone Terms and Features

A/B switch. A switch or function that allows you to change between the two carriers that serve an area.

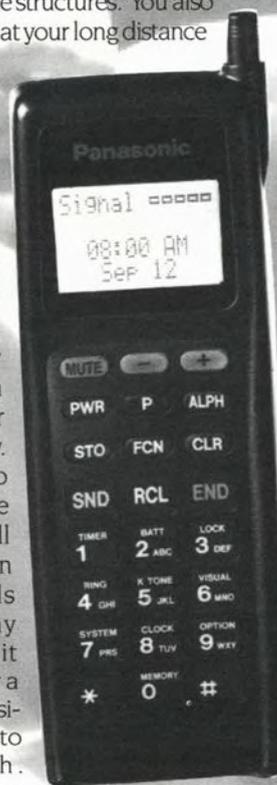
Alphanumeric memory. This feature allows you to store names to go with auto-dial phone numbers.

AMPS. See analog service.

Analog service. The current technology of most U.S. city and rural cellular systems. The system allows one user to have each channel alone. In peak periods this system can become overloaded and you have to wait for a free channel before your call can be made.

Call-in-absence horn alert. A user-activated feature that beeps the horn when you are outside the boat and can't hear the ringer.

Call-in-absence indicator. A feature that tells you a call was received while you were out.



Call-in-progress override. This feature keeps power to the phone during a call when you turn off the ignition of the tow vehicle.

Call restriction. A toll or use restriction feature that restricts toll, outbound or certain numbers from being called on the phone.

Call timer. Times all or specific calls to help you control costs. May include a tone reminder after a certain user set time.

Continuous DTMF (touch tones). Sends the standard phone company touch tones as long as a number key is pressed. Needed to access remote voice mail, computer-operated switchboards or answering machines.

Digital service. The latest type cellular system is found only in the largest U.S. cities. This technology shares the limited cellular frequencies between callers by using computer or digital technology.

Dual-mode. The latest type cellular phone that can transmit on either an analog or digital system. See analog and digital service.

Dual NAM. Allows the phone to have two phone numbers from different carriers. (You may not have two lines from the same carrier.)

Dropped call. A call that is disconnected when you move from one cell to another.

DTX. A battery-saving feature that cuts back output power on a call when you stop speaking.

Electronic lock. A security feature that allows you to lock the phone from all use. Important with portables or transportables that could be used if stolen.

Expanded spectrum. Full 832-channel analog cellular spectrum service available to user. (Also, see digital service.)

Failed call. A call that does not begin when you press the send key. The cell may be too busy to handle the call or you are out of range of the cell site.

FCN. Short for *function*. It is used to cause the cellular phone to access one of its special features like switching from one phone company's phone number to another.

Full power. The current maximum for an analog system is three watts. Portables are often limited to either .6 watts or 1.2 watts.

Hands-free answering. A system that answers after a set number of rings when you are present in the boat.

Hands-free operation. Built-in mike and speaker that allow you to talk on the phone without using the handset.

Home system. The cellular phone com-

pany that controls your phone number and bills you for service.

Mobile-mounting kit. An accessory package that allows a portable or transportable to be mounted to the power supply and antenna of the boat. Some kits include a full-power option.

Multiple NAM or Multi-NAM. The ability to have more than one phone number assigned to the phone. You could have service from two carriers in the same city and/or service from one or more carriers from cities you frequently visit.

Mute. This allows you to silence the phone's mike to talk privately with someone else.

NAM or Numerical Assignment Module. The device within your phone that uniquely identifies your instrument to the radio receivers of the cellular company. It tells them who you are and what phone number has been assigned to the instrument.

On-hook dialing. Allows you to dial the phone while it remains in its cradle.

RJ-11. A special type of plug that allows your cellular phone to add such outside vendor options as cellular FAX or V.32 cellular modems.

ROAM or roaming. Using the cellular services of a company other than your home area company. These services usually result in extra costs or charges.

Scratch pad. A feature that allows you to enter notes or phone numbers into the memories of the phone without causing the phone to create touch tones for each character.

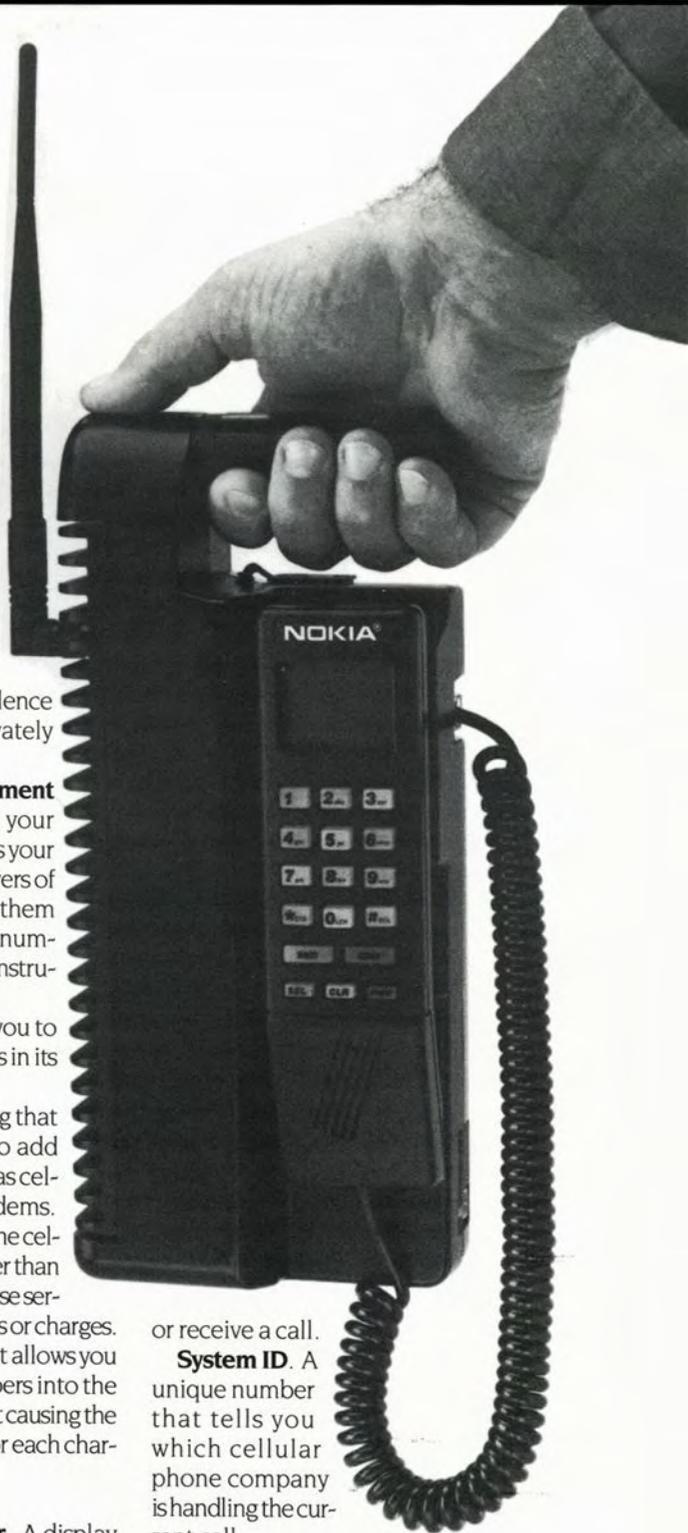
SID. See system ID.

Signal-strength indicator. A display that lets you know before you call about the relative strength of the cellular system transmitter in your immediate area.

SND. Short for *send*. The cellular phone key used to send the phone number on the display to the cellular phone company as the number you want to call. This is how you dial a call.

Speed dialing. A feature that allows you to locate a memory-stored number in the phone and have it dialed automatically.

Standby time. A measurement of the battery life of a phone that is waiting to send



or receive a call.

System ID. A unique number that tells you which cellular phone company is handling the current call.

TDMA. See digital service.

Talk time. A measurement of the continuous talk time of the battery on a cellular phone.

Three-watt booster. An option or accessory that boosts the transmit power of a portable to the maximum legally allowed when it is used as a boat-mounted unit.

Voice-activated dialing. A feature that allows you to have the phone dial a selected number on a voice command.

VOX. Same as DTX.

GAS, OIL AND OUTBOARDS

by Jeff Knapp

You're a conscientious boater when it comes to maintenance, right? You make sure fresh gear lube is put in the lower unit each season. You make sure your trailer bearings get a fresh hit of grease occasionally.

When you head for the water, your fuel tanks are topped off with the proper gas/oil mix. If your engine is oil injected, you see to it that the reservoir is full. You're not going to have a problem because you do things the proper way, right? Not necessarily.

What if I told you that the fuel you're burning may well be leaving carbon deposits that will cause major powerhead damage, the kind that results in repair bills of the four-figure variety? Marine dealers are witnessing a shocking increase in the number of customers experiencing carbon-related problems.

Consider also that the fuel in your tank can begin to separate in as little as 15 days, causing performance problems and possibly serious damage to your engine. Add to that alcohol-based additives in fuel that can harden fuel lines and seals, causing major headaches.

Dick Roasa, of Hileman's Marine in Kittanning, explains what is happening.

"We've had more problems this year than we've ever had before," says Roasa. "We've had to rebuild several engines over the winter. It's been a case of either cheap oil or gas, or a combination of both."

So what does burning inferior fuel in your outboard do to the engine?

"Carbon builds up on the rings, and they start to stick," says Roasa. "Once the rings begin to stick, you have a loss of compression, which means a loss of power. If the carbon buildup continues to stick the rings, eventually it burns holes in the pistons. This could lead to the piston seizing, and a rod going through the block, in which case the engine's history."

The process Roasa describes isn't some rare, worst-case scenario. It's something he sees with increasing regularity in outboard engines of all brands, from 9.9 hp models all the way up to 200 hp jobs.

The fuel you're burning may well be leaving carbon deposits that will cause major powerhead damage, the kind that results in repair bills of the four-figure variety.

A quick tour of Hileman's shop revealed what Roasa was talking about. On one of the benches was the block of a 40 hp outboard. Dick pointed out to me material deposited in the head of the motor, material that had once been part of a cylinder wall. The mechanic working on the engine estimated that the unfortunate owner would be looking at a bill of several hundred dollars.

In Hileman's showroom sits a display, the centerpiece of which is a heavily scoured outboard piston—another victim of poor fuel and oil products, and a reminder to their customers that "doing things right" is now a whole new ballgame.

Carbon problems

Why, all of a sudden, is the gas and oil we burn ruining our engines?

According to independent studies, as well as those conducted by outboard manufacturers, it can be traced to the grade of gasoline now available.

The unleaded gasoline we buy at the pumps is formulated for four-stroke vehicle engines, ones with relatively low compression ratios. "Extenders" such as benzene are used to maintain octane levels in unleaded gas. Unfortunately, these extender compounds result in dirty burning in the high-compression two-stroke engines common in most outboards. They result in carbon deposits.

According to Roasa, this problem is compounded by outboard owners using poor grades of oil, ones produced by oil companies rather than outboard manufacturers.

"The engine manufacturers do more research than anyone else, and we advocate that people use the oil recommended by the engine manufacturer," says Roasa.

In today's consumer-conscious market, it's natural to assume, when you hear advice like Roasa's, or read it in your owner's manual, that the company simply wants you to buy its oil. OEM oil tends to be more expensive than the "off-brands" you can find on sale at the local department store.

But as Roasa pointed out to me, outboard manufacturers want their products to last, so customers are happy, and to keep their warranty costs down. Also, from their standpoint, outboard makers have little to gain and lots to lose from elevating the cost of boating.

By now, you're probably wondering what the status of your outboard is. According to Roasa, the first symptoms are hard starting, rough running, and a loss of power. He says if you act quickly, you can eliminate major problems.

Carbon build-up solutions

"If you catch it quickly enough, you can use any of the clean-



Gas/Oil Maintenance at a Glance

1. Spray carburetor(s) with engine treatment to remove carbon build-up on piston rings.
 2. Use TC-W3 outboard oil of the brand recommended by the outboard manufacturer to prevent future build-up of carbon deposits.
 3. Use mid-range grade of gasoline, 89 to 91 octane level, from a busy station to have fresh fuel with the proper detergents and dispersing agents to ensure clean burning.
 4. Add fuel conditioner with each fill-up to stabilize the gasoline to prevent it from separating and accumulating water.
 5. Close air vents on portable fuel tanks to prevent accumulation of water in fuel tank because of condensation.
- All major manufacturers of outboard engines are now carrying the engine treatments, TC-W3 oils, and fuel conditioners mentioned here.—JK.

ing compounds that remove the carbon deposits that have begun to build up," notes Roasa. These compounds are sprayed directly into the engine's carburetor, like fogging spray that is applied before off-season storage.

After treatment, fuel additives are available to keep the problem from re-occurring. At this point, however, there's another option.

According to Roasa, the new TC-W3 oils have this additive already in them. For years, TC-W2 was the standard oil to be used in outboards. TC-W3 was developed to "address decreasing gasoline quality," as one manufacturer puts it.

Outboard manufacturers are beginning to recommend higher octane gasoline for their engines, not because they need the octane, but because fuels with higher ratings tend to be better grades of gasoline. They contain detergents and dispersing agents that aid in the clean burning of the fuel mixture. Most experts advise using mid-range octane level gasoline—89 to 91—from a name-brand distributor. It is also wise to buy your gas from a station that moves plenty of product.

In summary, "doing things right" means:

- Using an engine treatment compound to clean any carbon from the engine.
- Using the manufacturer's recommended brand of TC-W3 outboard oil to prevent future problems.
- Using an 89 to 91 octane grade of name-brand gasoline from a busy station.

Other gasoline-related problems

Present-day gasolines create problems for boaters other than ones of the carbon buildup variety. The gas found in some areas may be "oxygenated"—fuel designed to burn cleaner by producing harmless carbon dioxide gas rather than poisonous carbon monoxide. Chemicals such as ethanol and methanol (alcohols) are used to oxygenate gasoline, and these can have a negative effect on marine engines.

"During the storage of these gasolines, separation is occurring," says Roasa. "The alcohol that's in the gas, when it sits, especially when it's cold, begins to break down and separate. Then you get the alcohol by itself, and alcohol loves moisture. With any con-

densation you have water, alcohol and gasoline. You have a mess, an instant formula for varnish. The minute you start running the engine, it gets in the fuel system."

If the fuel isn't used quickly—15 days seems to be the commonly accepted duration—water accumulation can build up to the point where performance problems may occur.

Ethanol and methanol also form organic acids that can deteriorate parts such as gaskets, seals and hoses. Deposits in fuel systems can be loosened by this acid, resulting in plugged fuel filters and carburetor jets.

According to one study, engine wear problems have escalated because of the use of such "bad" gasoline. The manufacturer's test indicated that "wear patterns" that normally take 250 to 300 hours to develop did so in 25 to 50 hours when run on "bad fuel."

Fuel solutions

Outboard manufacturers have developed fuel conditioners and stabilizers that can be added to gasoline to minimize problems. They recommend the addition of these products with each fill-up, when the fuel is fresh.

With some brands of engines, water separation filters can be put in place. These do, however, require periodic maintenance.

On portable fuel tanks, be sure to close vents to prevent the accumulation of water. If you buy your gasoline at a marina, it's possible the fuel they sell isn't "oxygenated." Check and see.

New engines contain elastomer and plastic parts designed to resist the effects of alcohol-produced organic acid. However, with older engines you have a problem. It will first show up as a stiff fuel hose. If this is the case, it's a simple matter to purchase a new, alcohol-resistant fuel hose.

According to Roasa, if you do this quickly, chances are slim that damage will be done to engine seals and gaskets.

Today's Pennsylvania boaters need to take a much more enlightened look at proper maintenance. They also need to be willing to shell out a few extra bucks up front. The extra \$20 bill you spend on the best oil, some fuel conditioner, and a decent grade of gasoline during the boating season may well save you thousands in the long run.



TEST YOUR CANOE IQ

by Cliff Jacobson

A flickering campfire, simmering coffee and some good friends provide the perfect recipe for a great day of canoeing on your favorite Pennsylvania river. Today was a microcosm of everything that makes canoeing special: There were brawny rapids to run, riffles to meander, and long stretches of quiet water where you could sit back and let the world slip by. You pour some coffee from the fire-blackened kettle and then wander over to your canoe for a closer look at the minor damage incurred from the day's run. As you run your hand over the broken gel-coat, a friend sarcastically remarks that every canoe but yours cleared the last rock. "Better get a boat that turns...or saw that one in half," he chortles. With that, fuel is heaped on the fire and the stage is set for a no-holds-barred equipment shoot-out.

Here are some wonderfully difficult questions that may have been addressed at the party. One or more answers—or none of them—may be correct.



**THE SAFEST WAY TO
NEGOTIATE BENDS IS TO
BACKFERRY SLOWLY AROUND
THEM, TAIL TUCKED TOWARD
THE INSIDE CURVE.**



QUESTIONS

1. Match the following canoe parts with their definitions:
 1. Keel a) the width of the canoe.
 2. Ribs b) the upward curve of the bottom of the canoe at each end.
 3. Beam c) a shallow fin that runs along the bottom of the canoe from end to end.
 4. Rocker d) curved cross braces used to stiffen the bottom of a canoe.
 5. Stems e) the extreme ends of the canoe.
2. Which of these canoes would you choose for use on a twisting stream that has a lot of shallow, rocky rapids?
 - a) An 18-foot fine-ended fiberglass/Kevlar(tm) canoe that has no rocker.
 - b) A 17-foot stock aluminum canoe.
 - c) A narrow 17 1/2-foot Royalex(tm) touring canoe that has fine ends and no rocker.
 - d) A high-volume 16-foot Kevlar(tm) canoe that has buoyant rockered ends.

3. What do the following terms have in common? Static axle, bow wedge, cross-post, snap-turn, Christie:

- They describe the complex whitewater maneuvers that are required in Olympic canoeing events.
- Flatwater racing terms that describe procedures to get around obstacles—and other competitors—in the river.
- Whitewater slalom canoeists and kayakers use these techniques when they play big holes.
- They describe movements used by freestyle paddlers in solo and tandem canoes.

4. Match each canoe paddle to its intended use:

- Straight-shaft paddle with T-grip and Kevlar™ reinforced blade.
 - 14-degree carbon-fiber bent-shaft paddle.
 - S-blade wood paddle with uni-directional grip.
 - 10- or 12-degree bent-shaft wood paddle.
- severe whitewater.
 - freestyle canoeing.
 - general touring.
 - competitive flatwater racing.

5. Consider three identical 17-foot Kevlar(tm) canoes from the same manufacturer. Canoe A is a deep-red color, canoe B is white, canoe C is natural gold. If the trim weight (rails, seats, decks) of the boats is equal, which canoe probably weighs the least?

6. Consider two identical canoes from the same manufacturer. Canoe A has ash wood rails, canoe B has vinyl-covered aluminum rails. Which canoe weighs most?

7. Ahead, the river picks up speed and makes a sharp bend to the right. High waves on river left combine with a mound of trapped tree limbs to create a dangerous sweeper that can stop you in your tracks. To avoid the sweeper you must:

- Point the canoe toward river right and paddle powerfully forward as fast as you can.
- Point the canoe toward river right and paddle powerfully backward as fast as you can.
- Point the canoe forward river left and paddle powerfully backward as fast as you can.
- Allow the canoe to drift forward on river right. Control the angle by side-slipping the craft right or left as necessary.

8. You are paddling stern in large, incoming lake waves. To negotiate these huge waves safely, you should: a) Point the canoe directly into the waves and rudder to hold the angle while your bow partner paddles powerfully forward. b) Point the canoe directly into the waves, switch to bent-shaft paddles and switch sides frequently on command, as you paddle powerfully forward. c) Angle the canoe 45 degrees to the wind and “quarter” the waves, d) Turn the canoe sideways to the wind so its waterline will be shortened as the craft rides in the trough.

9. True or False: For lake travel, choose a canoe with a deep fin keel. For river travel, a canoe without a keel is best.

10. Given: Three canoes of similar shape. Canoe “A” is 18 feet long; canoe “B” is 17 feet long, and canoe “C” is 16 feet long. Which of these craft is fastest?

11. Given: Two identical canoes that weigh the same but are “laid up” differently. Canoe “A” is constructed entirely from Kevlar(tm) cloth. Canoe “B” is built from a combination of Kevlar(tm), carbon-fiber and S-glass (fiberglass). Which canoe can best survive the beating of a rocky river?

12. You want to buy a canoe for use on inland lakes and wide-open rivers where there are no obstacles or portages. You want a fast, easy paddling canoe, so you’ve decided on a narrow, light-weight 18 1/2-footer. Which hull material(s) is least suitable for your needs?

- aluminum, b) Royalex(tm), c) fiberglass/Kevlar(tm), d) cedar strip or wood-canvas.

13. Most of today’s best high-performance canoes feature some asymmetry below the waterline. That is, the bow section is narrower than the stern. The advantage(s) of asymmetry is (are):

- the canoe is faster, especially in shallow water.
- the canoe is faster, especially in deep water.
- the canoe has greater carrying capacity.
- the canoe turns better in both deep and shallow water.

14. Which canoe or canoes can safely be stored outdoors? a) aluminum, b) fiberglass/Kevlar(tm), c) Royalex(tm), d) polyethylene, e) wood-canvas.

15. You are drifting through a rapid when you spot a large eddy to your right. To get into the eddy you paddle powerfully forward and...

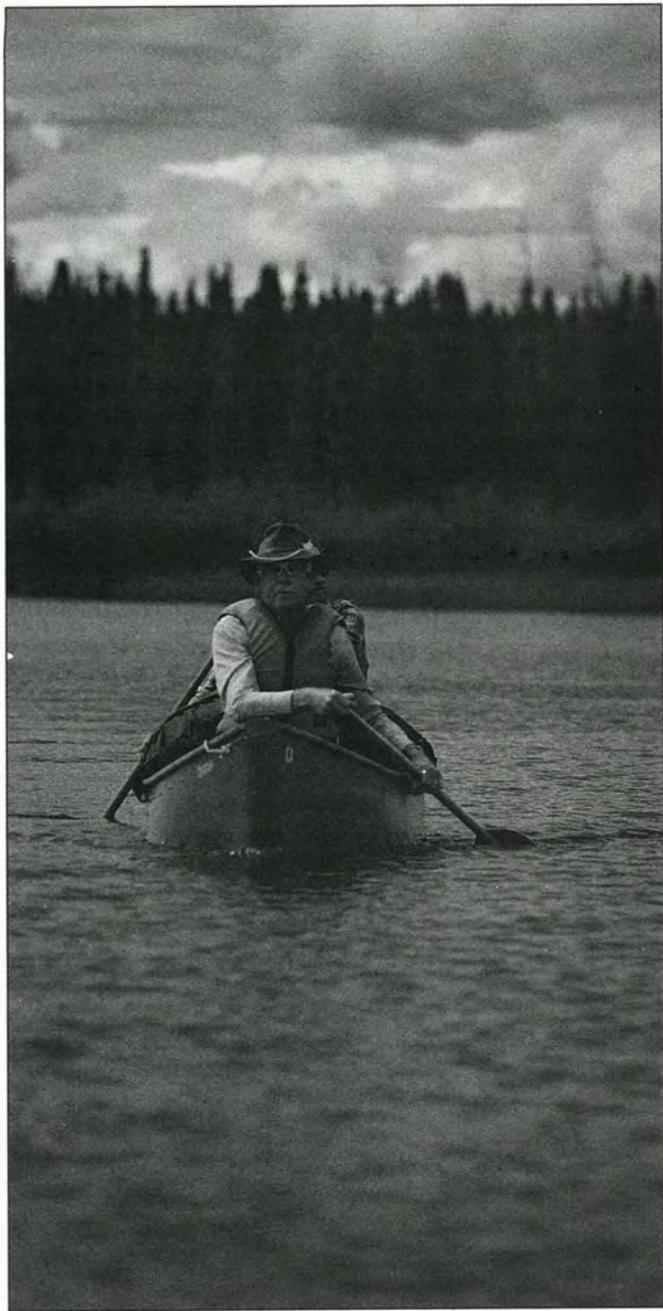
- brace and lean the boat to the right (upstream) as you cross the eddy line; b) brace and lean the canoe to the left (downstream) as you cross the eddy line; c) brace but do not lean the canoe as you cross the eddy line; d) neither braces nor leans are needed when moving from currents to eddies.

16. You are lining your canoe through a complex rapid. To prevent broaching (turning broadside to the current) and capsizing, you must: a) keep the canoe angled to the current—bow toward shore, stern farther out in the river; b) keep the canoe angled to the current—stern toward shore, bow farther out in the river; c) keep the canoe nearly parallel to the current at all times; d) keep the canoe broadside to the current.

17. When running rapids it is best to: a) always kneel in your canoe; b) sit, don’t kneel in your canoe; c) makes no difference whether you sit or kneel; d) kneel only if your canoe has high seats and a floor area that’s spacious enough to permit a wide kneeling stance.

18. Your friend has asked you to help her choose a canoe paddle of the proper length. You suggest that: a) the paddle grip should reach to her nose when the paddle is stood upright; b) she stretch out her arms and measure the distance between them. That’s the correct paddle length; c) when paddling bow, she should use a paddle that comes to her nose; for stern work, she should choose one that comes to the top of her head; d) she should sit in her canoe and measure the distance from her nose (height of the top grip of the paddle) to the water. That’s the shaft length. To this, add the length of the blade. That’s the correct overall length.

ANSWERS



**CANOES ARE DISPLACEMENT
HULLS WHOSE MAXIMUM
SPEED IS A FUNCTION OF
IN-WATER LENGTH. THUS,
THE LONGER THE CANOE, THE
FASTER IT RUNS.**

1. 1-C, 2-D, 3-A, 4-B, 5-E.

2. D: The design of the canoe, not the material from which it is made, is the determining factor. Though Royalex(tm) takes impact best, Kevlar(tm), fiberglass, aluminum, and even wood/canvas is up to the job if boats built from these materials are designed for whitewater and are paddled well. For use in rapids where quick turns and seaworthiness are essential, the key words are *high volume*, *short length* (under 17 feet), and a *heavy rockered hull*.

3. "D" is correct. "Freestyle" canoeing is a relatively new sport that combines classic northwoods paddling style with artistic maneuvering. Freestyle canoes are the hockey skates of the paddling world. They are artfully crafted from wood or high-tech composites and are designed to turn instantly when leaned to the rails. Like ice-skaters, freestyle competitors often time their routines to music.

4. 1-A: The key is "T-grip" and "reinforced blade."

2-D: The 14-degree bent-shaft is by far the most popular racing paddle.

3-B: Custom-built S-blade and precision-built, ultralight straight paddles are the choice of freestyle canoeists.

4-C: Paddles with 10- to 12-degree bends provide better control when moving around obstacles than do those with 14-degree bends. Nonetheless, many serious cruisers still prefer 14-degree bent-shafts for all their paddling. Score your answer correct if you were aware of these differences and preferences.

5. The gold canoe (c) has no color pigment so it will probably weigh 2 to 6 pounds less than the red boat. "White" canoes generally require less color pigment than deep-red or green ones, so they'll be lighter. Color (any color) adds protection from ultraviolet light and makes cosmetic repairs easy (just spray paint the patch to match the hull). It is almost impossible to effect a perfect cosmetic repair to a "clear" (natural gold) boat.

6. B: A typical 17-foot wood-trimmed canoe weighs 4 to 10 pounds less than its vinyl-aluminum-covered twin. Naked aluminum rails are colder to the touch than plastic-covered ones, but they're much lighter—about the same as wood.

7. C: The safest way to negotiate bends is to backferry slowly around them, tail tucked toward the inside curve. Choice "a" will net you a head-snapping eddy turn and leave you sitting bow upstream along the shore. It guarantees a capsize unless you and your partner are well-skilled, know exactly what you're doing, and have a rockered canoe that responds to your commands. Choice "b" will quickly put you into the maelstrom. Option "d" will do the same, though not as quickly.

8. Choice "b" or "c" is correct, depending on the conditions and your skills. Generally, beginners—and everyone who paddles highly rockered canoes—are less apt to broach (turn broadside to the waves) if they paddle *straight* into the wind. Bent-shaft paddles are the most efficient tools for making time in headwinds.

Choice "c" is not recommended because it takes a skilled team and a canoe that tracks well to hold a quartering angle in a strong headwind. The penalty for "improper quartering" is a broach and capsize. Rudder while the bow person paddles is an inefficient

way to negotiate oncoming waves. Turning sideways to the waves (broaching) is guaranteed to capsize you unless you and your partner can both brace effectively on the downwind side of the canoe.

9. False. One thing that's universally true about canoeing is that good canoes don't have keels! Centuries-old canoe makers understood that straight tracking (staying on course) is best achieved by combining fine, deep stems (ends) with a long, straight keel "line." Consequently, neither the Indian nor voyageur canoes had keels. Keels were developed by 19th century white men to stiffen the flat, floppy bottoms of their badly designed canoes.

10. Canoe "a" is fastest. Canoes are displacement hulls whose maximum speed is a function of in-water length. Thus, the longer the canoe, the faster it runs. You can compute the relationship mathematically by applying the over-simplified formula: Speed in miles per hour equals 1.55 times the square root of the waterline length, measured in feet. Thus, an 18 1/2-footer peaks out at around 6.7 miles per hour, and a 16-footer barely manages 6.2 miles per hour.

However, speed and ease of paddling are not the same. The formula tells you only the maximum hull speed, not the effort required to get it there. It's quite possible for a sophisticated 16-footer to paddle more easily than a workhorse 18-footer. Indeed, short, narrow canoes often "feel" faster than longer, wider ones when they are paddled at moderate cruising speeds. But push both boats hard and the longer canoe always accelerates ahead.

11. Canoe "b." Laminations of appropriate materials synergize to increase durability. For example, pure Kevlar(tm) boats abrade readily—the Kevlar(tm) cloth frizzes into cottony strands and the boat looks like it needs a haircut. Kevlar(tm) simply forms more "hair" when it is sanded, so you must bond fiberglass cloth (which can be sanded) over the damaged area to "feather in" the patch. Add S-glass—an abrasion-resistant form of fiberglass—to the outside layer during construction and you eliminate the fuzz. Selective use of carbon fiber and/or special closed-cell foam, stiffens floppy areas without adding much weight. For these reasons, canoes that are "alloyed" from select materials are usually more durable than those constructed of pure Kevlar(tm). And they are much less expensive. Score your answer correct if you understood this phenomenon.

12. Aluminum (a) is unsuitable; Royalex(tm) (b) runs a close second. Aluminum cannot be formed in the tight curves that are necessary to produce the racy lines needed for speed. Significant progress has been made in the design and fabrication of Royalex(tm)—notably by Dagger(tm) canoe company, but this material is still heavier and bulkier than others. If you want a fast, light canoe, avoid aluminum and Royalex(tm). Score your answer correct if you checked "a" or "b."

13. "A" is correct. By placing the maximum beam (width) of the canoe behind center, the bow presents a finer entry (narrower wedge) to the water, which translates into greater speed. The stern is made fuller than the bow (below the waterline) because the canoe tends to create turbulence (a wake) at its tail when it is paddled hard. The faster you paddle, the greater the turbulence, especially in shallow water. At a speed of around six miles per hour the stern sinks sufficiently to make it appear that the canoe is being

paddled uphill. Racers refer to this phenomenon as "climbing." To correct for this the stern is built wider (more buoyant) than the bow. The resulting canoe is faster than symmetrically designed craft, especially in water less than two or three feet deep.

14. Aluminum is the only material that will not be hurt by long-term exposure to the elements. Fiberglass, Kevlar(tm), Royalex(tm) and polyethylene canoes suffer irreparable damage from ultraviolet light. Plastic rails, seats and decks become brittle and crack long before there is visible evidence in the hull. Wood-canvas canoes simply rot and fall apart. If you must leave your non-metal canoe outdoors, cover it with a sun-proof tarp. Caution: the tarp must not touch the boat at any point. A free exchange of air is necessary to prevent fading and material decay.

15. "A" is correct. Always lean a canoe down current when maneuvering into or out of eddies. The current within an eddy flows opposite to that of the river, so you must lean the boat upstream (in relation to the river's flow) when you drive across the eddy line into the reversed flow. Lean downstream to leave the eddy.

16. B) the stern must be kept inside the bow at all times when lining downstream. Reverse the procedure when tracking upstream. Virtually all lining accidents are the result of allowing the stern to "swing out" as the boat drifts downstream.

17. "D" is correct. Whether you sit or kneel—or alternate between the two—depends on the design of your canoe. Kneeling is practical in the bow of a canoe only if the paddling station is wide enough to permit the bow person to spread his or her knees wide against the bilges for stability. If it isn't—and most fine-lined cruisers are not—then the bow person is best off to sit on the low-mounted seat and brace the feet firmly against a bow flotation tank or improvised brace.

18. "D" is correct. Choosing a paddle according to your height has no rational basis because you sit, not stand, in a canoe. Upper body length and the height of your canoe seat are determining factors in paddle length. Old ideas—and formulas—die hard.

SCORING

16-18: Tech-weenie and champion of the equipment shoot-out.

14-15: Local trivia master.

12-13: Aspiring canoe yuppie: your score will improve if you read more and paddle less.

10-11: Better make coffee while your friends are arguing.

9 OR FEWER: Go watch a sunset—you don't belong in camp with this crew.

National Boating Safety Youth Program of Excellence

The National Boating Safety Youth Program of Excellence Award was established to recognize outstanding youth boating safety education programs. The award is two \$2,500 endowments to be used to implement or enhance a youth-oriented boating safety program. The National Safe Boating Council (NSBC) administers this award, which is funded by Boston Whaler, Inc. Two programs will be selected based on review of applications that include program criteria and the availability for others to use the program as a model.

To receive the award, successful applicants must agree to attend the upcoming National Safe Boating Council's Education and Professional Training Seminar and present a session on their award-winning youth programs. Registration, travel, lodging, and subsistence based on the federal allowance will be covered by the NSBC for a representative to attend the seminar. Arrangements for travel and lodging will be made by the council's administrative manager. In addition, award recipients will be required to submit a detailed course of study, implementation guidelines, and at least two photos that will be printed in the seminar proceedings. The recipients must also agree that the program will be available for implementation by other groups and organizations across the country.

The award may be used to purchase necessary safety equipment, audiovisual aids, printing, teaching aids, program promotion and advertisement, rental time of pool or waterfront, transportation costs to on-the-water sites or other costs associated with the advancement of the program. Funds may not be used as wages or salaries for instructors.

The "National Boating Safety Youth Program of Excellence Award" is administered by the National Safe Boating Council along the following guidelines:

- The maximum amount of funding available in a given year is \$2,500 per applicant. The council may award two grants per year, annual maximum of \$5,000 for the total program.

- Award applications will be evaluated by a council committee based on program criteria that includes a program description, budget proposal, and availability of program to be duplicated by other groups. An interview (personal or telephone) by a committee representative with the program administrator may be required before final award approval.

For a youth boating program to qualify, it must integrate safety practices into the program and be aimed at students under 18 years of age. Selection priority is given to unique or innovative programs.

Applications may be requested by contacting: National Safe Boating Council Youth Award Program, c/o Virgil Chambers, Youth Awards Chair, Pennsylvania Fish and Boat Commission, P.O. Box 67000, Harrisburg PA 17106-7000. Phone (717) 657-4540 (voice); (717) 657-4549 (fax). Application deadline is December 31, 1993, for a grant to be awarded in 1994.

Boat Registration Facts and Figures

The number of registered boats in Pennsylvania continues to grow steadily. During 1992, the total number of registered boats reached 311,893 (not including dealer registrations). This growth was a modest 3.7 percent increase from 1991. However, in the last 10 years, the number of registered boats in Pennsylvania has increased 53 percent.

Allegheny County continues to be the state's leader with the largest concentration of registered boats. At the end of the 1992 boating season, 29,560 boats were registered in this county.

With an increase of 694 (five percent) registered boats during the 1992 season, Bucks County had the largest single increase of any of Pennsylvania's 67 counties. Bucks County ranks second among counties in the state for the total number of registered boats (14,601). Luzerne, York, Montgomery and Erie counties follow respectively. The overall average increase per county for the 1992 season is 148 boats.

The southwest regional counties (Allegheny, Beaver, Washington and Westmoreland) include 17 percent of the total number of registered boats in Pennsylvania. Allegheny County alone accounts for 10 percent of all of Pennsylvania's registered boats.

The newest boating trend on the water today is the personal watercraft. During the 1992 season, the number of registered personal watercraft increased 25 percent over 1991. The number of registered personal watercraft now totals 7,658. At the end of the 1992 season, Kawasaki led all personal watercraft manufacturers with a total of 4,173 registered units. Yamaha was second with 2,115 and Bombardier (SeaDoo) was third with 1,135. Over the past four years, the total number of registered personal watercraft has increased from 3,225 to 7,658 (137.5 percent).

During the 1992 season, the Boat Registration Division issued more than 21,000 "new" boat registration numbers and more than 7,500 duplicate registration certificates.

The division registered more than 25,000 unpowered boats in 1992. The unpowered boat category increased by 5,000 over 1991. The unpowered boat category is forecast to show modest increases over the next few registration seasons, because more and more boaters are using Commission-owned lakes and access areas.—
Andrew Mutch, Chief, Boat Registration Division, Bureau of Boating.

Miles Appointed to Boating Advisory Board

Gary Miles, North East, was appointed to the Commission Boating Advisory Board in July by Governor Robert P. Casey. Miles is a member of the Great Lakes Coalition, serving as international treasurer and Pennsylvania chairman. He is a member of the U.S. Coast Guard Auxiliary, the Presque Isle State Park Advisory Board, and the Presque Isle Yacht Club. Miles own a 16-foot Starcraft and an 18-foot McKeecraft. He is employed by the Thomas F. White Company, of Erie, an investment brokerage.

Boat Registration Renewals

Last December, the Fish and Boat Commission mailed boat registration renewals to approximately 160,000 boaters whose registration decals expire March 31, 1993. Boat registration fees are a primary source of funding for programs and services that promote safer boating on Pennsylvania waters. The Commission does not receive general fund tax revenues to provide services to Pennsylvania boaters.

In 1992, boat registration fees increased for the first time since 1963. The Commission also implemented a two-year boat registration cycle to improve productivity and reduce administrative costs (postage, printing and personnel). The current fees for two-year registrations are as follows:

Boats less than 16 feet \$20

Boats 16 feet to less than 20 feet \$30

Boats 20 feet and larger \$40

Unpowered boats* \$10

Duplicate certificate fee \$3

*Registration of unpowered boats is voluntary, but it is required for all boats using Commission access areas and lakes.

Along with current validation decals, boaters receive a handbook containing detailed information on boating safety.

The Commission reminds boaters that capacity plates are required for every monohull boat less than 20 feet operated on Commonwealth waters if that boat is designed to carry two or more persons and is propelled by machinery or oars. Canoes, sailboats, kayaks, inflatables, hydroplanes and boats considered by the Commission to be of unusual or unique design, are exempt from having a capacity plate. The horsepower and weight-carrying capacities indicated on a capacity plate are recommended maximums applicable in normal conditions. Capacity plates are issued for a boat considered to be in sound and seaworthy condition. It is the owner's responsibility to ensure that his boat is constructed soundly to protect the safety of its occupants. If a boat does not have a capacity plate from the manufacturer, one can be obtained from the Commission for \$5.

For additional information or boat registrations, contact the Boat Registration Division, P.O. Box 68900, Harrisburg, PA 17106-8900, or call (717) 657-4551. For more information on boating safety and capacity plates, contact the Boating Safety and Education Division, PA Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000, or call (717) 657-4540.

Fatal Boating Accidents Increase

For the first time in five years, the number of fatalities in recreational boating accidents has increased, according to the U.S. Coast Guard. Fatalities reached 924 in 1991, up from 865 in 1990. The higher number of deaths translates to a slightly higher fatality rate for boating—the measure the Coast Guard uses to put fatality statistics in perspective with the growing boating population.

Last year, the boat population grew by half a million to an estimated total of 20 million. This increase set the number of fatalities for 1991 at 4.6 per 100,000 boats. Although this figure is up from 1990, when fatalities numbered 4.4 per 100,000, it is an improvement from 1989—and shows a significant progress since 1971 when the death toll was 20.2 deaths per 100,000 boats. Overall, on-water safety has improved over the past two decades, particularly in the context of a boating population that has nearly tripled in size.

The Coast Guard attributes last year's increase in deaths to the warmer than usual winter, which extended the boating season in many parts of the country. Milder weather means more boating activity in late fall or early spring when hypothermia is a much greater risk to boaters who fall overboard or capsize. Capsizes and falls overboard accounted for more than 60 percent of all boating fatalities in 1991.

According to Admiral William Ecker, head of the Coast Guard's boating safety program, "Many deaths could be prevented in smaller, open boats if people would get into the habit of wearing personal flotation devices. Life jackets are comparable to seat belts in automobiles—they won't help in an accident unless you are wearing them."

According to Ecker, boating while intoxicated (BWI) continues to be a serious problem. "We believe excessive alcohol consumption plays a part in at least half of all fatal boating accidents," he said, noting a study done for the Coast Guard indicating that intoxicated boaters (with a blood alcohol level of .10 percent or above) are nearly 11 times more likely to die in a boating accident than those who are sober.

The National Marine Manufacturers Association (NMMA) and its members are striving to show alcohol's adverse role in boating safety. Working with Miller Brewing Company, the NMMA encourages boaters to use a "designated driver" approach. A training video to enhance BWI enforcement efforts of marine patrol units nationwide is also under development.

Notice to Subscribers

Act 1982-88 provides that certain records of the Pennsylvania Fish and Boat Commission are not public records for purposes of the Right-to-Know Law. This means that the Commission can place appropriate conditions on the release of such records. The Commission has decided to make the subscriber list for *Boat Pennsylvania* available to statewide nonprofit, nonpartisan fishing, boating and sportsmen's organizations for nonprofit, noncommercial organizational purposes under limited circumstances.

If you do not want your name and address included on the subscriber mailing list to be made available to the described organizations, you must notify the Commission in writing before January 1, 1994. Send a postcard or letter stating, "Please exclude my name and address from *Boat Pennsylvania's* subscriber mailing list." Send these notifications to Eleanor Mutch, *Boat PA* Circulation, P.O. Box 67000, Harrisburg, PA 17106-7000.

CANOEING BASICS

by Richard Combs

The canoe is a marvel of engineering and a testament to the concept that form follows function. It is simple, sleek, fast, efficient, strong, lightweight, versatile and capable of carrying amazing payloads. The carrying capacity of my 17-foot canoe is surprisingly close to that of my Chevy S-10 Blazer.

Though many people enjoy paddling a canoe as an end in itself, even more perceive canoeing as a means to an end. Birdwatchers, anglers, wildlife photographers, hunters and folks who simply enjoy a leisurely float down a lazy stream on a Sunday afternoon often use canoes in pursuit of their favorite activities.

Now, there is nothing wrong with approaching canoeing from a primarily utilitarian perspective. Certainly those who invented the canoe saw it that way.

For the modern weekend paddler, though, there is a drawback to that perspective, and the drawback is that few of us who paddle canoes infrequently really learn how to paddle them. As soon as we reach a point at which we can generally avoid large objects in a slow current, we pronounce ourselves canoeists, and our paddling education stops.

Safety alone should dictate against such an attitude, for even small, slow-moving streams can be hazardous to the untutored. A 17-foot canoe full of water with a three-mile-per-hour current

pushing it has roughly the weight of a Volkswagen Beetle. Beyond safety, though, the canoe can be more than a means of getting to the birds, the fish or the solitude. Used properly, the canoe serves as a fishing platform that is much less obtrusive than any other fishing craft, as well as more maneuverable. For bird watchers, photographers or hunters, a canoe can be a moving blind—silent and stealthy, and affording an approach that wildlife is not accustomed to suspecting. The effective paddler sees far more wildlife than does a hiker. The ineffective paddler can see more wildlife from his car.

Understand that I'm not talking here about becoming a world-class paddler—just learning a few basic techniques, all of which can be mastered with a little practice. Even though no book, magazine article or training manual can substitute for hands-on training, practicing the fundamental strokes discussed here can improve your paddling a great deal.

One difference between the effective paddler and the novice is that the novice thinks of the canoe as unstable, or "tippy." Question: Would your canoe be more stable with an outrigger? Answer: Properly paddled, your canoe HAS an outrigger. The outrigger is you, or to be more precise, you and your paddle.

Picture your paddle as the part of an outrigger that holds the boat upright by contacting the water whenever the boat leans. The brace between the canoe and that part of the outrigger is you.

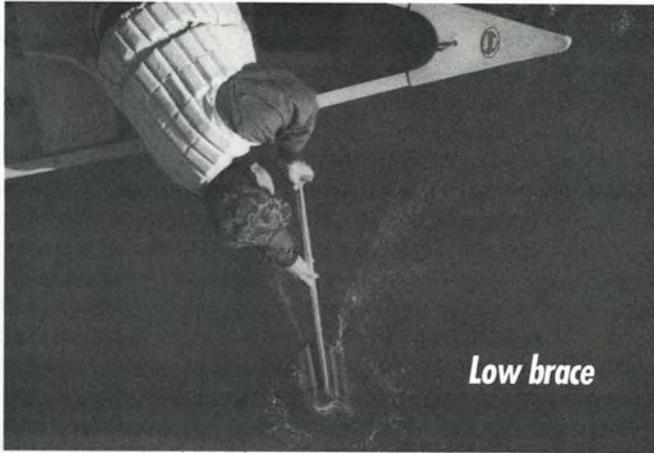
As long as you have your paddle in hand—assuming, of course, that you know how to use it and have confidence in it—you are in a very stable craft. Until you learn to lean on that paddle, literally and figuratively, you are indeed in a very unstable vessel. This idea brings us to the first stroke every paddler should master.

Low brace

This stroke is purely a defensive maneuver. Its purpose is to prevent your canoe from capsizing. It is a simple stroke. The paddler leans far to the side and slaps the face of the paddle forcefully against the surface of the water, stopping the boat's roll, then pushes downward with the paddle to roll the canoe back to an upright position.

Here are the important things to remember about this stroke:

Learning to perform these strokes instinctively can certainly make you a better, safer, more confident and more effective paddler



First, the low brace is an active, not a passive, maneuver. To be effective it must be done confidently, forcefully. When properly executed, the paddler's center of gravity is actually outside the boat, with his weight on the paddle. If the paddle were to suddenly disappear, the boat would certainly roll.

The reason paddlers find this stroke difficult is because they do not fully understand just how much resistance water offers. As a result, they lack confidence and perform the stroke in a half-hearted, timid manner that is ineffective. The only way to build confidence in this stroke is to do it successfully.

I suggest starting out in warm water where you do not mind getting wet or even taking a spill. Do it over and over, remembering to lean far out of the boat and slap the water hard. You'll be surprised how well it works. You'll realize that, with two paddlers in a canoe, paddling on opposite sides, the only way the canoe can tip in all but the most unusual circumstances is if one of the two paddlers fails to execute a low brace.

Second, to be effective the stroke must be done instinctively. Hesitate one second and it's wet city. The only way to execute this stroke instinctively is to practice it over and over.

Forward stroke

What's to know about a simple, forward stroke? Actually, flatwater racers dedicate years to perfecting it. For our purposes, suffice it to say that paddlers should endeavor to execute this stroke using the back and shoulders, pushing down with the top hand more than pulling with the lower. Also, short, quick strokes are more effective than slow, long ones. Remember that when the paddle goes past the hip, most of the energy is wasted in lifting, as opposed to pushing, water. Lean forward and take quick strokes, keeping the paddle near-vertical throughout the stroke and lifting the paddle smoothly when it is even with the hips, and your forward stroke will improve 100 percent.

J stroke

This is a stroke for paddlers in the stern. A straight, forward stroke from the stern tends to cause the boat to turn in the opposite direction—that is, a paddler paddling on the right will push the bow of the canoe to the left. To compensate, the novice switches sides to paddle on the left, then back to the right, etc. The result is a highly inefficient, zig-zagging means of location. The boat is not firmly in control, and the paddler performing such a maneuver is frequently not in position to perform a low brace should it be necessary—which it will sooner or later. Never mind that flatwater racers often switch paddling sides; they are in highly specialized craft with a highly specialized purpose.

The J stroke is descriptively named. It consists of twisting the wrist to push outward, away from the gunwale, at the end of an ordinary forward stroke. Though it feels a little awkward at first, with a little practice this basic stroke becomes second nature. Many modern paddlers learn to execute this stroke by prying off the gunwale at the end of the forward stroke. If this feels comfortable to you, there is no reason not to do it except that it can be noisy, especially if you paddle an aluminum canoe. You may wish to use the pry as an intermediate step. As soon as it becomes second nature to you, work on holding the paddle away from the gunwale and simply twisting your wrist.

As you get comfortable with the stroke, you will find yourself using it unconsciously. Current, wind, the strength of the bow



paddler and other factors determine if you make a "hard" J on every stroke, or a slight intermittent J as a minor adjustment when needed.

Keep in mind that the J stroke is not only an efficient way to travel in a straight line. It affords a method of turning without switching paddling sides. A very pronounced J on the right side of the boat turns the canoe to the right, and vice-versa.

Pry, draw

The pry stroke is exactly what the name suggests. The paddler inserts his paddle into the water beside the boat, with the paddle face horizontal to the hull, and pries, using the gunwale as a fulcrum.

The draw is the opposite. The paddler leans over the gunwale, inserts the paddle vertically into the water, and draws the paddle toward the boat.

When the situation demands it, either stroke is rapidly repeated. With a little practice, the pry in particular can be performed with an underwater recovery that makes a faster, quieter and more efficient stroke.



When should you use these strokes? Imagine you are moving downstream in a fairly swift current. Dead ahead, but at some distance, is a large obstruction. A pair of neophyte paddlers will turn the canoe at an angle and paddle like mad to clear the obstruction. Sometimes they make it, sometimes they broach against it in the current.

Two experienced paddlers communicate which side of the obstruction they wish to go around. One draws repeatedly as the other pries, (they are paddling on opposite sides, as always), and the boat moves laterally in the current and slides effortlessly past the obstruction. Try it and you'll be surprised how easy it is—just be sure to begin the maneuver far enough upstream to give yourself a little time, and always practice on easy water.

In addition, either stroke may be used independently by bow or stern paddlers to keep the canoe properly aligned, or to make subtle adjustments in direction.

In very shallow water, the bow paddler can lean forward from the bow and perform both these strokes with the paddle held at an angle. The stern paddler can perform a similar maneuver, leaning back and holding the paddle behind him. In this manner, experienced paddlers can pick their way quite effectively through shallow, rocky water.

Cross-bow draw

Imagine you are in the bow, paddling on the left, in a swift current. The stream drops several feet between two boulders and then makes a sharp turn to the right. You prepare to execute a low brace as you run the channel, but it proves unnecessary. As the stern clears the chute, you find yourself watching the steep rock bank rushing to meet you. What should you do?

You could begin prying like mad, but the fact is that the pry is not the most powerful stroke, and probably will not prevent a collision. Furiously backpaddling is not an option, given the fast current and the narrow chute behind you. If only you were paddling on the other side of the canoe, you could pull the boat to the right with a couple of swift draws.

The answer to this particular highly hypothetical situation is a cross-bow draw. To execute it, you swing the paddle across the bow to your right, twisting from the hips, and perform a draw stroke on the right side of the boat.

Voila! The bow turns sharply to the right, the current kicks the stern around, and you're on your way. Ideally, anyhow.

The cross-bow draw is simply the preferred stroke when you need the more powerful draw stroke, but find yourself paddling on the wrong side of the canoe to perform a simple draw.

Sweep

Again, the name is descriptive. A paddler in either the bow or the stern of the boat should execute this stroke to make as sharp a turn as possible while maintaining some forward momentum. The farther from the gunwale is the paddle, the sharper the turn. This stroke is executed by reaching forward and to the side, with the paddle at a very shallow angle and then sweeping back, or the same stroke may be executed in reverse to achieve the opposite effect. It is not as powerful a stroke as the draw or the pry, but it can be useful, particularly on flat water.



Sit or kneel?

There is no law that says one must always kneel in a canoe, and there are sometimes reasons not to. Be aware, though, that kneeling keeps the center of gravity lower, increasing stability, and that kneeling provides greater leverage, making any stroke more powerful and effective. Any time speed or endurance becomes a factor in canoeing—paddling long distances, for instance—or any time wind, waves or tricky currents become a factor in your paddling, kneeling is advisable.

Wearing knee pads, or even glueing pads onto the bottom of your canoe, is helpful. The knee pads sold for gardening or brick-laying work fine. Closed cell foam or similar material can be glued to the inside of the hull. Practice kneeling as you paddle and you'll soon find that unless your activities dictate otherwise, kneeling is as comfortable as, or more comfortable than, sitting in a canoe.

Learning—even perfecting—the basic strokes briefly described here will not make you an expert canoeist. There are other strokes, for one thing, and there are variations on all the strokes discussed. There is the all-important matter of learning to read a river. There is also the matter of learning to apply the strokes in performing various techniques such as ferrying, eddying out, eddying in, surfing and so forth. But learning to perform these strokes instinctively can certainly make you a better, safer, more confident and more effective paddler.



4

Great Water Skiing Spots

by Heidi Milbrand

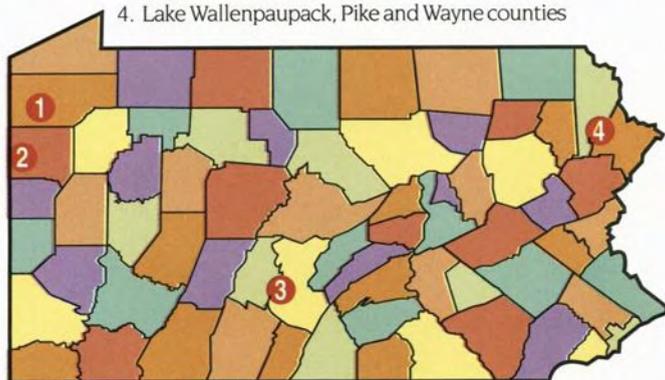


It was that time of year again. You searched for your skis, dug out that tow line and attempted to get your boat "ski-ready." You looked over the map and decided where you wanted to go skiing. Maybe it was time to try a new lake or just go back to your favorite haunts.

Did you ever wonder what the people who patrol these lakes, the waterways conservation officers, think of you skiing out on the waters? Three officers at four of our bigger skiing lakes had a few things to say.

Let's look at four lakes—Conneaut, Shenango, Raystown and Lake Wallenpaupack. We will tell you how to get there, what facilities are available and what our officers think about these waters for skiing.

1. Conneaut Lake, Crawford County
2. Shenango Lake, Mercer County
3. Raystown Lake, Huntingdon County
4. Lake Wallenpaupack, Pike and Wayne counties



Shenango, Conneaut

Shenango Lake is a U.S. Army Corps of Engineers lake that covers 3,500 acres and offers unlimited horsepower. It is located just above Sharpsville, Mercer County. To get there, take Route 18 north from I-80 (almost at the Ohio border) if you're traveling from Pittsburgh or central and eastern Pennsylvania. If you're traveling from the Erie area, take I-79 to Route 18 south.

There are three Corps accesses—Clark Recreation area, located off Route 258; Hartford Access area, located off Route 846, and Parker's Landing Access area, also located off Route 846. There is also a private access at the marina located next to the Clark Recreation area.

Mercer County WCO Frank Parise says that there aren't a lot of problems on this lake. The skiers stay in the ski area, which is clearly marked, and keep to themselves. He says that the main problem on Shenango is the fluctuating water level, which exposes snags.

Parise also talks about Conneaut Lake. This waterway is a natural lake, a smaller lake but with an equal amount of water skiing pressure as Shenango. Conneaut is 925 acres, approximately three miles long and one to two miles wide with a depth of 90 feet. The lake has unlimited horsepower. It is located west of Meadville on Route 6. There is a free Fish and Boat Commission access at the northwest corner of the lake, off Route 618. There are launching, mooring and parking facilities located at this access. There are also commercial docks and a launching area available.

Raystown Lake

This waterway is one of Pennsylvania's most popular recreation spots. Over one million visitors annually head for Raystown Lake. Raystown is probably the most popular waterway among Pennsylvania boaters. It is 30 miles long and encompasses over 8,300 acres, which makes it the largest manmade lake completely within Commonwealth borders.

There are two major recreation areas with surfaced ramps and eight other public-use areas with launch ramps. The lake is open to all kinds of boating, but be sure to observe regulations in several controlled areas.

WCO Alan Robinson, who patrols Huntingdon County and Raystown Lake, says that overall Raystown is a pretty good lake to ski on. "Congestion is prominent on weekends and holidays and trying to learn how to ski then is not a good idea. But during the week the water skiing is not bad, and the locals and people camping usually ski the first two hours of the day, realizing that this is the best time to ski."

Robinson also says that there are two slalom courses set up by the U.S. Army Corps of Engineers and maintained by private ski clubs.

There are no major violations for water skiing, but the rules that are violated most often include "no observer on board" and "after hours" skiing, Robinson says.

One other water sport allowed at Raystown is parasailing, which is permitted from sunrise to noon on weekdays and weekends but not on holidays.

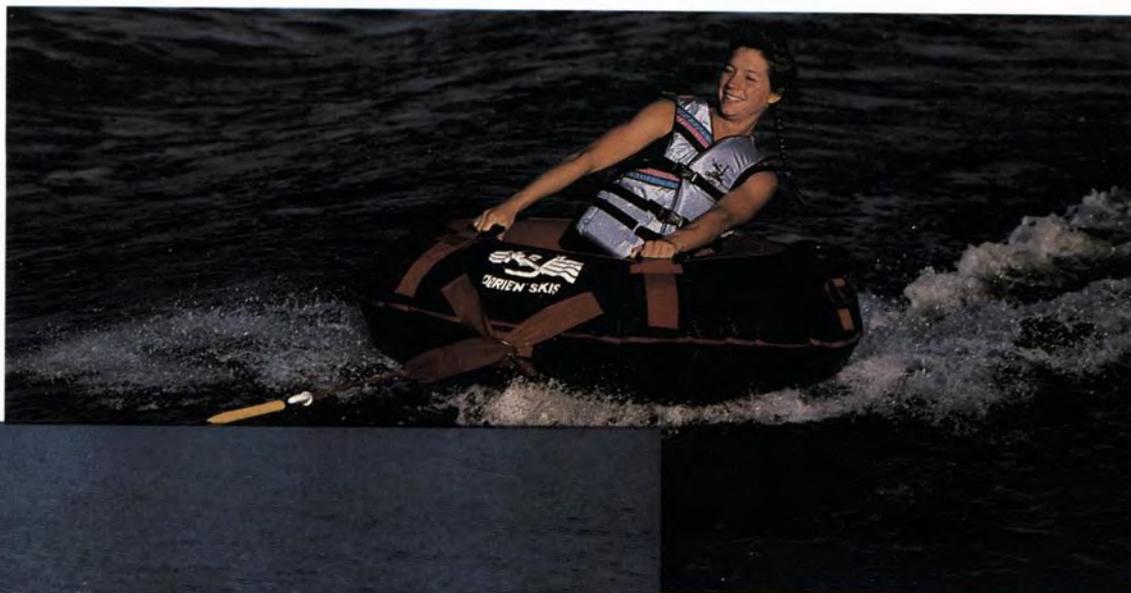
The lake is located off Route 26, south of Huntingdon. Take the Turnpike to exit 11 or 12 and follow Route 30 to Route 26 to Raystown Lake, or routes 220 or 22. The U.S. Army Corps of Engineers phone number for Raystown Lake is (814) 658-3405.



Lake Wallenpaupack

Lake Wallenpaupack is located in the center of the Pocono Mountains bordering Pike and Wayne counties off of I-84. This waterway offers 5,700 acres of water skiing and 52 miles of shoreline. This lake is very big and draws huge crowds, so be careful.

The Fish and Boat Commission maintains one access, just off Route 590, with launch ramps and parking. PP&L has established and maintains four lakeshore campsites, each with its own launching area, parking and sanitary facilities. In addition to the PP&L sites, commercial public launching areas include Mountain Bay, White Beauty View, Lake Wallenpaupack Yacht Club (members only), Seely's and Walt's Landing.



Raystown Lake is a pretty good lake to ski on. The lake is congested on weekends and holidays, but during the week the water skiing isn't bad. The best time to ski is the first two hours of the day.



One other water sport allowed at Raystown Lake is parasailing, which is permitted from sunrise to noon on weekdays and weekends but not on holidays.

DWCO Jacqueline Carey says that water skiing on Lake Wallenpaupack is a very popular and an ever-growing sport, with participants ranging from small children to senior citizens. They ski one at a time, two at a time, even three or more at a time—

sometimes on skis and sometimes barefoot, and once in a while, someone skis on a chair!

Of course, when people are having fun, they sometimes forget things, including the purpose of having a competent observer aboard the tow boat. DWCO Carey remembers a busy summer day.

"We came across a young man, wearing a PFD, bobbing around in the middle of the lake. Not seeing a boat nearby him, we stopped to see if everything was all right. He waved to us and said that he bounced off his tube and was waiting for the boat to come back to pick him up. We looked around and finally spotted his boat, about a mile down the lake. After helping him into the patrol boat, we traveled down to find his boat, which was finally on its way back. Once we pulled up alongside, we asked the two observers just what they had been observing because they hadn't noticed losing their passenger. The young men sheepishly said he was watching 'the girls in bikinis on the docks.'

"People who are enjoying their watersports sometimes just don't want to quit—the 'one more run' becomes another and another. After dark one evening we had just cleared an access area with the patrol boat and were about to increase our speed when we spotted something in the water directly in front of the boat. We cut back, turned our boat and stopped by the object, which was a fallen skier. As his boat came up on the other side of him, the first words he spoke were, 'Officers, I think we are practicing safe skiing—no one else is out here!'

"Don't get the wrong impression of skiers or tubers on Lake Wallenpaupack. The majority are safety-conscious all the time. A lot of the people who come to enjoy the lake are from out of state and they constantly tell us that they love the spaciousness and beauty of the lake. If you enjoy water sports—boating, water skiing or tubing—come try Lake Wallenpaupack. It's a big, beautiful lake."

Water skiing is surely a very popular sport, but it can stay popular only if you, the water skier, keep it safe. Our officers are out there to help you, not only in protecting you but also to enforce the boating rules and regulations. If you are stopped by an officer, cooperate.

So next season you have your boat ready and in prime condition, all your gear is stowed properly in the boat and you have the munchies packed away. Hit the water for some fun!



A Dream Craft for Our Rivers

by Mike Bleech



As a kid growing up along the middle Allegheny River, I envisioned some sort of craft that might carry me up through the shallow gravel riffles. Then I rowed the slow eddies, and if I wanted to get to the next pool upriver, I got out of the boat and pulled it up the riffles.

Once I rigged a square sail, precisely the size of a bed sheet, and tried to sail my flat-bottom wood boat up the mild riffles beside the Buckaloons Campground. The sail caught a stiff wind and was taking me up those riffles, but unfortunately I was out of control, going sideways as much as upriver. A strong gust broke my mast, and I was lucky it did not take my head off when it snapped. I gave up that notion.

So for the most part, river travel during normal summer flow has been limited to

floating downriver, a perfectly delightful way to idle away a day, but not a very efficient way to get from point A to point B if the latter is farther upriver.

Imagine my delight a few years ago when my little brother Greg pulled in front of my home trailing his new jet-drive outboard and 16-foot john boat. And imagine further how many potential river journeys raced through my mind when he handed me my own set of keys to that rig!

What can a jet drive do, compared to a propeller driven outboard motor?

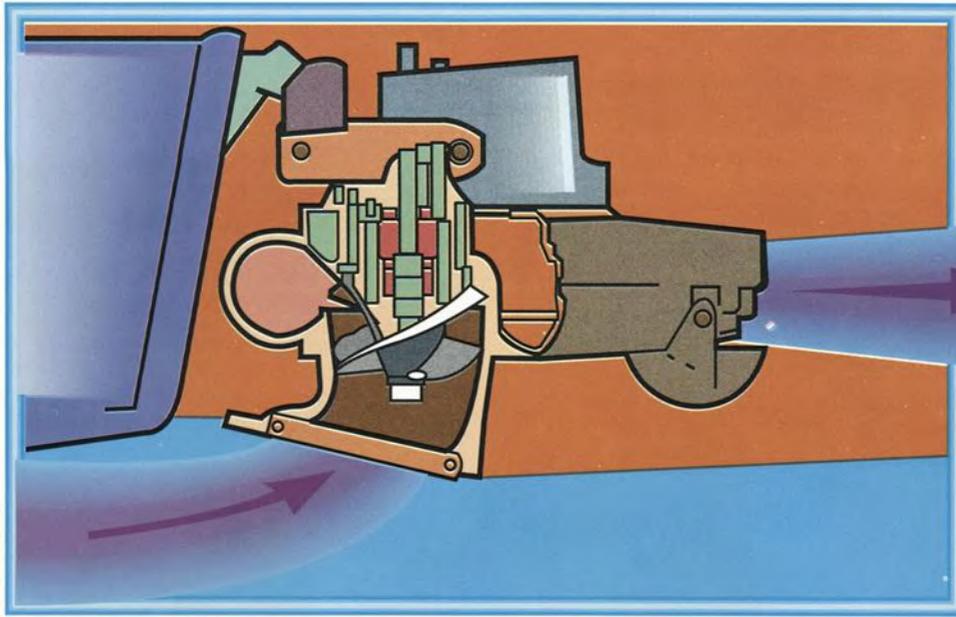
Using my 7 1/2 hp outboard on a 12-foot boat, I can get into the next pool upriver from the closest Allegheny River launch ramp. When river flow is at normal summer level, I have to set the motor on shallow-water drive. That gets me through a

mild riffle if the water is at least 15 inches deep. So I can travel over about 1 1/2 miles of river under power.

In the right circumstances a jet drive can be operated in water as shallow as 4 inches. Maneuverability is very good. Using Greg's jet boat I can now traverse the Allegheny from the Kinzua Dam downriver to the locks and dams below I-80, and motor back again. That means 1 1/2 miles for the best propset-up, compared to more than a 100-mile range with the jet—quite an improvement, I'd say.

Unquestionably, jet drive outboard motors effectively operate in water much shallower than standard propeller-drive outboards, but not without cost.

The first thing that comes to mind when you hear "cost" is the price tag of a jet drive.



with the top of the tunnel. The intake should slant aft slightly.

Balancing the load is a major consideration both while under power and while drifting. Because the motors are relatively heavy, they drift

deeper at the transom than similarly powered prop-driven boats. Forward loading is the rule. The craft Redline demonstrated, a 16-foot welded-aluminum john boat with

a tunnel hull, compensated for the weight of the 65 hp jet outboard at the transom by placing the steering toward the front of the boat. The forward operator's seat has an even more important advantage, though.

"We know that you must be near the front so you can read the river,"

Harry says.

The controls are located to place the operator in the center of the boat.

"If you have a side console," Harry says, "every time you turn to the right you have a tendency to cavitate."

Wide, flat-bottom boats are best suited to shallow water use because they get a lot of lift. Redline likes the flat-bottom boat with a square tunnel, and offers sound reason.

"With a tunnel, if the boat will float it will run because the intake is 4 inches up in the tunnel," Redline says. "The first thing to hit has to be the bottom of the hull."

The lower unit houses the jet drive, and it is made of cast aluminum. Hitting a rock at high speed can damage it severely. Scraping the bottom of the hull is much less damaging, within reason.

The purpose of jet drive is running on thin water. Scraping the hull over rocks can be a frequent occurrence. The ideal hull must be sturdy aluminum, considering all the practical options.

"They are going to get thumped," Redline says, "and a rivet is likely to give. I think a welded hull is a good idea."

Jet-drive outboard motors open up a new dimension of river boating. Jets must be operated very close to maximum efficiency, though, because their acceptable performance margin is relatively narrow. Use maximum horsepower on a durable, flat-bottomed aluminum boat. Mount the front of the intake flush with the bottom of the hull, or flush with the tunnel. Such a craft makes a river traveler's dreams come true.



They are considerably more expensive than propeller driven outboards with similar thrust. Also, inexpensive hulls are not practical because they must endure so much rough service.

Jet drive also costs power—something like a 30 percent drop in efficiency, says Harry Redline, former Commission WCO and currently an employee of a major jet drive dealership. A 90 hp is reduced to 65 hp, a 50 hp motor to 35 hp, a 30 hp to 21 hp.

I consulted Redline about some of the things jet drive boaters should know. He has seen many jet-driven outboards set up the right way, and the wrong way.

Before the outboard makers began offering jet drive as a factory option, the motors were rated with the horsepower they had before aftermarket conversion to jet drive. Though a motor might be putting out just 28 hp, using my brother Greg's rig as an example, the motor was labeled 40 hp. Thus, it could be legally operated only when mounted on a boat rated for at least 40 hp. The problem is that a 28 hp jet thrust is only marginal power for a john boat rated for at least 40 hp.

As with propeller-driven craft, jet boats ride high in the water with adequate power, and they ride deeper as power is reduced. The main idea behind jet drive is shallow-water operation, so if you are serious about motoring through shallow water, it is imperative to operate a craft at peak efficiency.

The weight-to-power ratio of jet-drive outboards is not good, in relation to propeller drive. The 65 hp jet drive Redline demonstrated was built with a 90 hp head—the weight of a 90 hp with the thrust of a 65 hp.

Jet-drive outboards have forward, neutral and reverse settings. However, the value of the latter two settings is questionable. "Reverse" is just a cup that reverses the direction of the jet stream. It moves a boat backward, barely. "Neutral" is some vague halfway place that, judging from the jet boats that I have observed, exists only in theory.

The considerable suction that draws water into the jet drive also sucks up other things that fit through the intake screen. Once the boat is up to speed, the water sucked in by the motor is primarily the water that rushes under the hull. When the motor is accelerated from a stop in shallow water, bottom material including sand and gravel can be sucked into the jet mechanism.

Jet boat travel is difficult to impossible during fall when leaves are heaviest on the water, or through aquatic weeds, because debris clogs the intake.

Even though jet-drive outboard motors have shortcomings, they are the best, often the only, means for upriver boating on hundreds of miles of Pennsylvania rivers and creeks. Shortcomings must be considered minor in comparison to the advantages.

Redline explains how shortcomings of jet drive can be minimized by setting the motors up properly on adequate boats.

The most frequent mistake is setting the intake too deep in the water, Redline says. This reduces efficiency, and in this position the lower unit is the first part of the craft to strike bottom. The leading edge of the intake should be flush with the bottom of the hull, or in the case of a tunnel hull, flush

Beltzville Lake

by Cheryl Hornung



Because of flooding through the years in the Lehigh Valley, the Beltzville Lake Project was built by the U.S. Army Corps of Engineers in 1971 as a flood control project. In addition, it provides water for consumers downstream from Palmerton to Philadelphia and recreation facilities for the public.

The dam is built across Pohopoco Creek about four miles east of Lehigh. It can hold back about nine billion gallons of water during floods, and when the lake fills to its normal level, the dam creates a five-mile-long boating paradise. According to WCO Wayne Alfano, all kinds of boating activity are found on these waters.

Beltzville State Park in Lehigh officially opened in 1972. It is accessible from the Northeast Extension of the Turnpike from Exit 34 off U.S. Route 209. Boaters from Philadelphia to Allentown frequently enjoy these waters. Many visitors also come from our neighboring states.

Beltzville's recreation facilities are a result of the cooperative effort of the U.S. Army Corps of Engineers and the Department of Environmental Resources, Bureau of State Parks. Adjacent to the park is the Pennsylvania Game Commission's Beltzville Wildlife Management Project. Law enforcement on the water is provided by Fish & Boat Commission WCOs and state park rangers.

From December 1992 to May 1993, this park had over 350,000 visitors. There are three major recreation sites located at Pine Run Cove, Trinity Gorge and Twinflower. A three-lane launch ramp, courtesy docks, wide gravel beaching area, and parking lot are provided at Pine Run East along the northern lake shore. A two-lane launch ramp and parking lot are located on the southeast shore at Preacher's Camp.

Because the lake has no horsepower restrictions, most smaller nonpowered boats such as sailboats and canoes launch from the Preacher's Camp ramp to take advantage of the large no-wake zone in the river coves. The Pine Run East launch is the larger of the facilities, so most large powerboats launch from there. Anglers launch from both areas.

According to Alfano, the trend in recent years has been for larger powerboats to cruise the lake. However, like many of our waterways, there has also been an increase in the number of personal watercraft. Boating in general has increased on the waters during the past several years.

Motorboats at Beltzville must have a current Pennsylvania boat registration. Non-powered boats must have either a current Pennsylvania boat registration or state park launching permit. It is unlawful to operate boats equipped with inboard engines with over-the-transom or straight-stack exhausts.

Alfano says that a pleasant summer weekend could bring out so many boaters that it could take several hours to launch. The boat traffic on the water is regulated by parking. When the parking lots fill, the areas are closed. No additional vehicles or trailers

are allowed into the area until someone leaves. As one rig leaves the park, the rangers allow another to enter.

If you want to enjoy these waters, take a vacation during the week to avoid some of the congestion.

Pine Run, Wild Creek and Pohopoco Creek bays are designated as slow, minimum-height-swell speeds (no-wake zones). The bay adjacent to the beach where the boat rental operates is also a no-wake zone.

These no-wake zones are where the nonpowered boaters and anglers tend to congregate. According to Alfano, anglers enjoy the fishing whether in the quiet Wild Creek or Pohopoco Creek coves or trolling for walleyes in the early morning hours before the skiers hit their course.

Beltzville Lake is stocked with lake trout, rainbow trout, brown trout, walleyes and channel catfish, according to Dave Arnold, Area Fisheries Manager for the Pennsylvania Fish & Boat Commission.

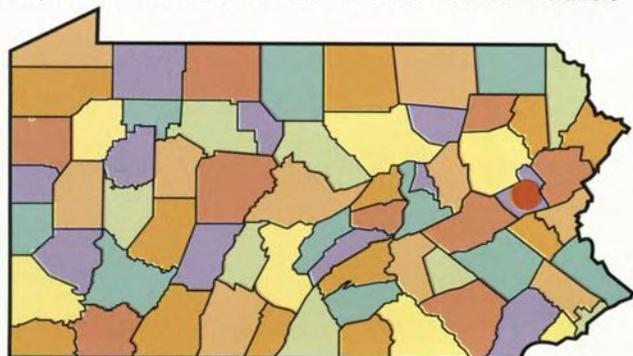
Water skiing is permitted only between the hours of 10 a.m. local time to sunset in the zoned ski area along the south shore of the lake. This zoned ski area runs from the boom above the dam to a point approximately two miles upstream. All boats in this zoned ski area must operate in a counterclockwise direction. Boats not engaged in skiing must remain outside the ski zone area while skiing is in progress. On weekdays, it is unlawful for a boat to tow more than two water skiers at a time. On weekends—Saturdays and Sundays—and federal holidays, it is unlawful for a boat to tow more than one water skier at a time. It is illegal to kite-ski or parasail on these waters.

The park has many other public facilities. A guarded sand beach is open from Memorial Day weekend to Labor Day from 11 a.m. to 7 p.m., weather permitting. Swimming is permitted only at the beach. A bathhouse with showers, a first aid building, and a food concession are located near the beach. The boat rental west of the beach rents everything from ski boats to canoes, just in case you'd like to try a new kind of boating. Just remember that the bay at the boat rental is a no-wake zone.

There is no camping or lodging at the park. Private accommodations can be found nearby. The park is open from 8 a.m. to sunset. However, the boat launch ramps are kept open 24 hours a day to accommodate anglers.

Many park facilities and areas are accessible for disabled visitors. These areas include the swimming area, showers, comfort station, picnic tables, picnic pavilion, park office, parking spaces and courtesy boat dock. The boat dock has a lifter for access in and out of boats. Check with the park office for assistance.

For more information, contact Beltzville State Park, Department of Environmental Resources, RD 3, Box 242, Lehigh, PA 18235, or call (215) 377-3170.



Because the lake has no horsepower restrictions, most smaller nonpowered boats such as sailboats and canoes launch from the Preacher's Camp ramp to take advantage of the large no-wake zone in the river coves.

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