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BOAT

Pennsylvania



The Keystone State's Official Boating Magazine



VIEWPOINT

The Future of Boating in Pennsylvania

The boating program in Pennsylvania covers many areas, including boat registration, law enforcement, education, information, public relations, access and administration. Pulling all these functions together into a cohesive package is an interesting and rewarding experience. As state boating law administrator, I become involved in a myriad of activities each day with none quite the same as the day before. A day's work may include responding to a request from a legislator, developing a workshop for the Corps of Engineers, discussing the construction of an access area with the Commission engineers, and solving a problem with the boat registration computer system. Working closely with the various Commission program managers, the Bureau of Boating represents the Commonwealth's boaters wherever and whenever needed.

This task is not always easy, because the sincere desires of various boating groups are not always compatible with one another. We attempt to develop and manage our programs



John Simmons
Director
Bureau of Boating
Pennsylvania Fish Commission

so that the majority of boaters are at least moderately satisfied most of the time. Our efforts do not always succeed. We sometimes take much criticism for our actions.

Oftentimes we are in a no-win situation, arbitrating differences between various factions of the boating community. Our attempt to register unpowered boats is an example of such a situation. The owners of these boats are philosophically opposed to registration, and no amount of explanation of the benefits they receive from Commission programs seems to convince them that they should help support those programs.

On the other hand, the increasing presence of unpowered boats on the state's water resources and facilities constructed with motorboat registration fees has motorboat owners upset and calling for equity.

Powerboaters pay the registration fees to support law enforcement safety patrols, educational programs, the publication of safety literature and the development of safety information programs. Powerboaters pay for the acquisition, development and maintenance of boating access sites, which today number in excess of 225.

Powerboaters pay for the administration of the boating program. The operators of unpowered boats pay nothing for the use of these services. We believe that this inequity must be rectified, and the Commission will continue to press for legislation that will register all boats in the Commonwealth.

As everyone knows, a knowledgeable boater is a better boater. The more informed the boating population is, the fewer would be the problems that occur even on congested waters. To increase the knowledge of Pennsylvania boaters, the Commission has developed a series of educational programs aimed at making better boaters. It is our goal to make education available to all boaters who want training and to provide the type of training that is needed. This cannot be accomplished with Commission staff alone. Consequently, we have solicited the support of teachers in the public school systems, camp counselors, scout leaders, volunteer firemen, and very important, volunteers from the U.S. Coast Guard Auxiliary and U.S. Power Squadrons. Each year this cadre of volunteers trains thousands of individuals in the practices of safe boating.

We do not believe that mandatory education is the solution to the Commonwealth's accident problem as has been suggested by some. The majority of the

accidents in Pennsylvania would not have been prevented by book knowledge. Only an attitude change that causes boaters to be aware of the consequences of their actions can prevent these accidents. We do believe, however, that education will result in a more enjoyable experience as more boaters are aware of the basic rules of courtesy and boat operation. We encourage education and will continue to develop and present courses that address the needs of our boaters.

It is the goal of the Commission to provide adequate access to the waters of the Commonwealth. Despite the number of accesses built in recent years by the Commission and other state and federal agencies, there remains a vast amount of water where good access is not yet available. Marina slips are in short supply in many areas, and even though the public sector is providing many slips, more need to be built. The Commission will encourage continued development by the private sector and will direct its own limited development efforts to construct access areas where the need is greatest.

The enforcement of laws and regulations has continued to grow in importance as the number of boats using our waterways grows. In 1987, over 250,000 boats were registered in Pennsylvania. Some 100,000 unpowered boats ply our waters and annually thousands of out-of-state boats travel to our state and enjoy our lakes and rivers. Boating has grown at the rate of about 4.5 percent per year over the past 15 years. The number of law enforcement officers has not.

With the graduation of a new class of waterways conservation officers in June, every district will have a full-time officer assigned for the first time in many years. This will not last long, however, because retirements will again deplete the ranks of this first line of Commission employees. More officer presence is needed on the most popular waters, but under the current budget restrictions, expansion is not possible. The Commission will continue to do the best that it can with available resources and continue to rely heavily on the deputy force that has served us so well over the years.

The future of boating in Pennsylvania is limitless. It will continue to expand, placing additional burdens on the Commission, our natural resources, and on our patience. Proper planning and the cooperation of all involved will ensure that all of us have the opportunity to participate in the sport we love.

John Simmons



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The covers

This issue's front cover, photographed by Kevin O'Brien, shows a maneuver that often pops up in the life of a paddler. Find out where you could put yourself in this position by checking out the article that begins on page 4. If you're a sailor, don't miss the fast-paced article on page 14, and if you trailer a boat, see page 30.

This issue's back cover, photographed by David Brownell, shows the results of applying the information in the article on page 28. Lastly, no matter what kind of boating you like, the article on page 10 has something for you.

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FIRE PROOF!

by Cheryl Kimerline

Boat fires are life-threatening! Most are preventable, but fires can happen to even the most safety-conscious boater. Fire is the major cause of property damage on pleasure boats. In 1987, there were three boat fires at Raystown Lake causing over \$25,000 in property damage. The fires were not immediately contained and all boats were destroyed.

Know what kind of fire-fighting equipment you need on your boat and how to use it before an emergency arises.

Elements of a fire

Fuel, oxygen and heat are three elements that must be present for a fire to burn. Remove any element and the fire goes out. Most fires are extinguished by cooling (dropping the temperature below that which supports combustion) or smothering (shutting off the air supply).

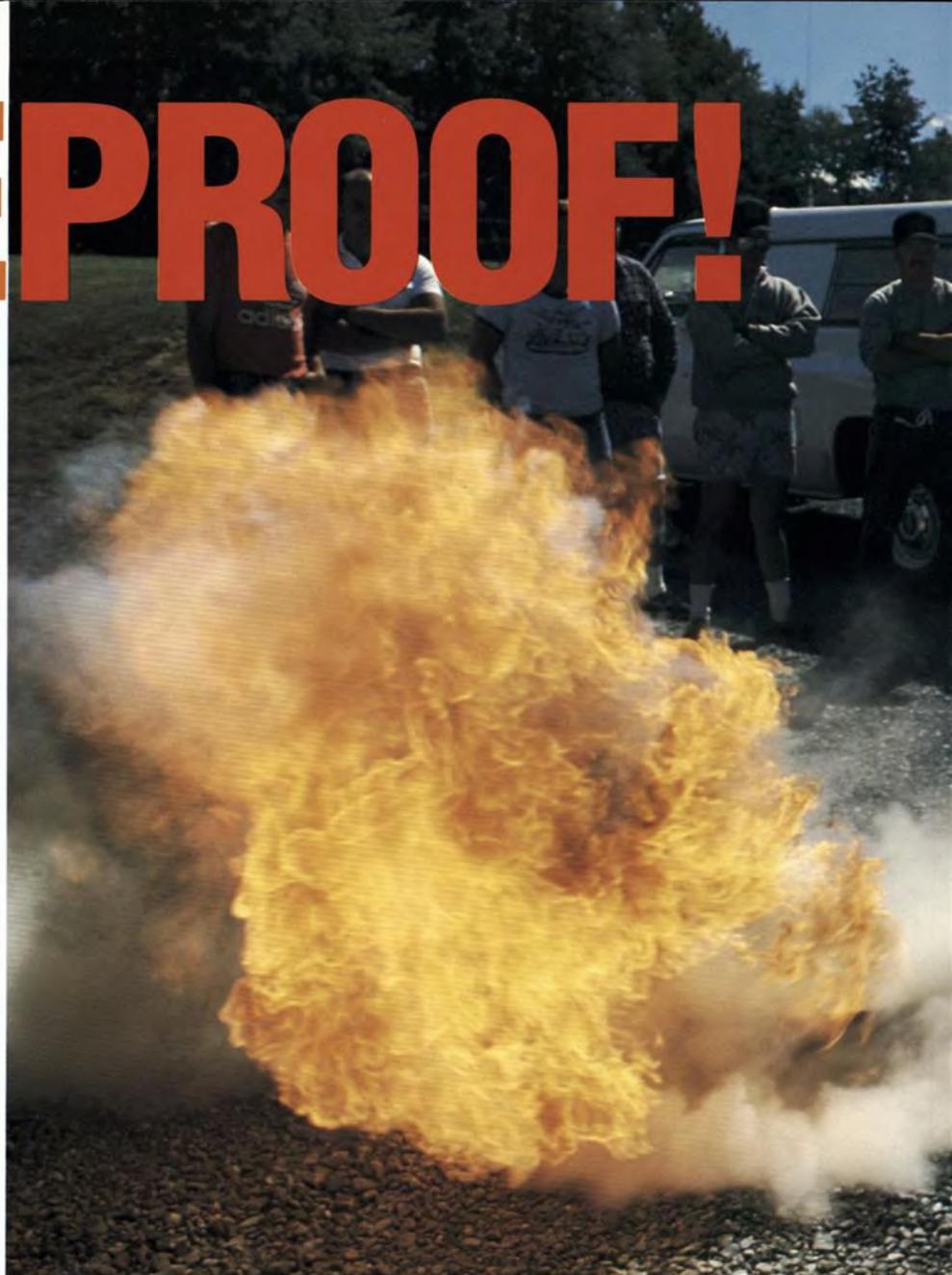
Classes of fire extinguishers

Fires are designated as Class A (ordinary combustibles), B (flammable liquids) and C (electrical equipment). Fire extinguishers are also divided into the same classification to designate the types of fires they put out. Flammable liquids are the primary fire hazards on recreational boats, so Type B fire extinguishers are those required by law. There are several types of Class B fire extinguishers approved by the U.S. Coast Guard, including carbon dioxide (CO₂), halon, dry chemical and foam.

Carbon dioxide fire extinguishers are most effective in closed spaces and can be used on flammable liquids or on electrical fires. Carbon dioxide removes the oxygen so that the fire is smothered. This extinguisher is heavy and bulky. The initial cost is moderate, but the extinguisher can be recharged. It must be checked yearly by weight to see if it is fully charged.

Halon fire extinguishers are still fairly new to boating. Halon is a colorless, odorless gas that stops fire instantly by a chemical reaction. These fire extinguishers are expensive but lightweight and portable.

Dry chemical fire extinguishers are the most popular for small boats. They are light, portable and inexpensive, and they are good in closed or open spaces. These



extinguishers require little maintenance and are effective on flammable liquids and electrical fires.

A gauge shows if a dry chemical fire extinguisher needs to be charged. Tap the gauge to make sure it is not stuck. Shake the fire extinguisher every so often to loosen the dry chemical inside to keep it from hardening and settling. If the gauge has a low reading, make sure you get the extinguisher recharged or replaced.

Foam fire extinguishers have not been produced for many years, although they are still present on pleasure boats. They are good in open or closed areas because they smother and cool fires. Unfortunately, they leave a residue that is difficult to clean up. Do not use these extinguishers on electrical fires because foam conducts electricity. These fire extinguishers are

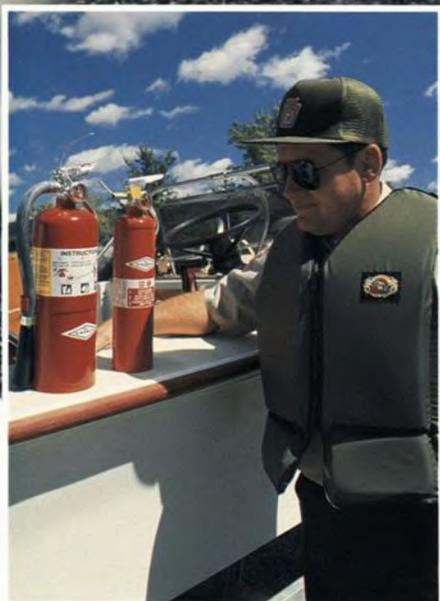
heavy, bulky and must be recharged annually.

State requirements

The number of U.S. Coast Guard approved fire extinguishers required on motorboats depends on boat length and construction. Fire extinguishers must be carried on all motorboats that have closed compartments, permanently installed fuel tanks, double bottoms not sealed to the hull or double bottoms not completely filled with flotation material.

Motorboats less than 26 feet, propelled by an outboard motor and not carrying passengers for hire, do not need to carry a fire extinguisher if the boat is of open construction and has no areas in which flammable gases or vapors could be trapped.

Each fire extinguisher is classified by a



Common violations

As an officer checking boating safety equipment, I commonly found fire extinguisher violations. Most power boaters had fire extinguishers on board, but often the devices were not usable. Common problems were discharged extinguishers and obstructed nozzles. Spiders and other insects often make homes in the nozzle, blocking it for use. The gauges on fire extinguishers sometimes read discharged even if they have not been used.

The constant pounding on the water, the intense heat in closed compartments and leaving fire extinguishers on the boat in storage during the summer heat and winter freeze all contribute to why an extinguisher may be discharged. Check your fire extinguisher before each boating trip to make sure it is fully charged and in

letter and number. The letter designates the type of fire the extinguisher puts out. The number represents the amount of extinguishing agent a fire extinguisher holds. Shown in figure 1 are the requirements that fire extinguishers must meet when carried on recreational boats. Motorboats under 26 feet must carry at least one B-I type approved portable fire extinguisher. Motorboats 26 feet in length and less than 40 feet must carry at least two B-I types or one B-II approved portable fire extinguisher.

Figure 1.

| Coast Guard Classes | Foam (gallons) | CO ₂ (pounds) | Dry Chemical (pounds) |
|---------------------|----------------|--------------------------|-----------------------|
| B-I | 1¼ | 4 | 2 |
| B-II | 2½ | 15 | 10 |

good condition. Your fire extinguisher is your best (and only) fire prevention policy when on the water.

Fire extinguishers must be stored where they are readily accessible and most effective. Mount or store your fire extinguisher toward the bow of your boat where the operator or passengers can easily reach it. Never mount it near the motor or fuel supply where fires most frequently start. Know how to release your extinguisher from the mount. When inspecting boats, I occasionally have found people who could not wrestle their extinguishers from the mount so that I could inspect it. How could this fire extinguisher be used to put out a fire quickly?

Fighting a fire

Fires may start on a small scale or with an explosion. If a gasoline explosion occurs, the only thing to do is to make sure you are wearing a personal flotation device and jump overboard. If the fire is in a confined space, close the hatches or window to prevent oxygen from feeding the flames. Do not reopen the hatch or window until your fire extinguisher is ready for use.

Small marine fire extinguishers usually have a discharge time of only 8 to 20 seconds. Use them efficiently and do not hesitate! Aim at the base of the fire and use short bursts, sweeping from side to side.

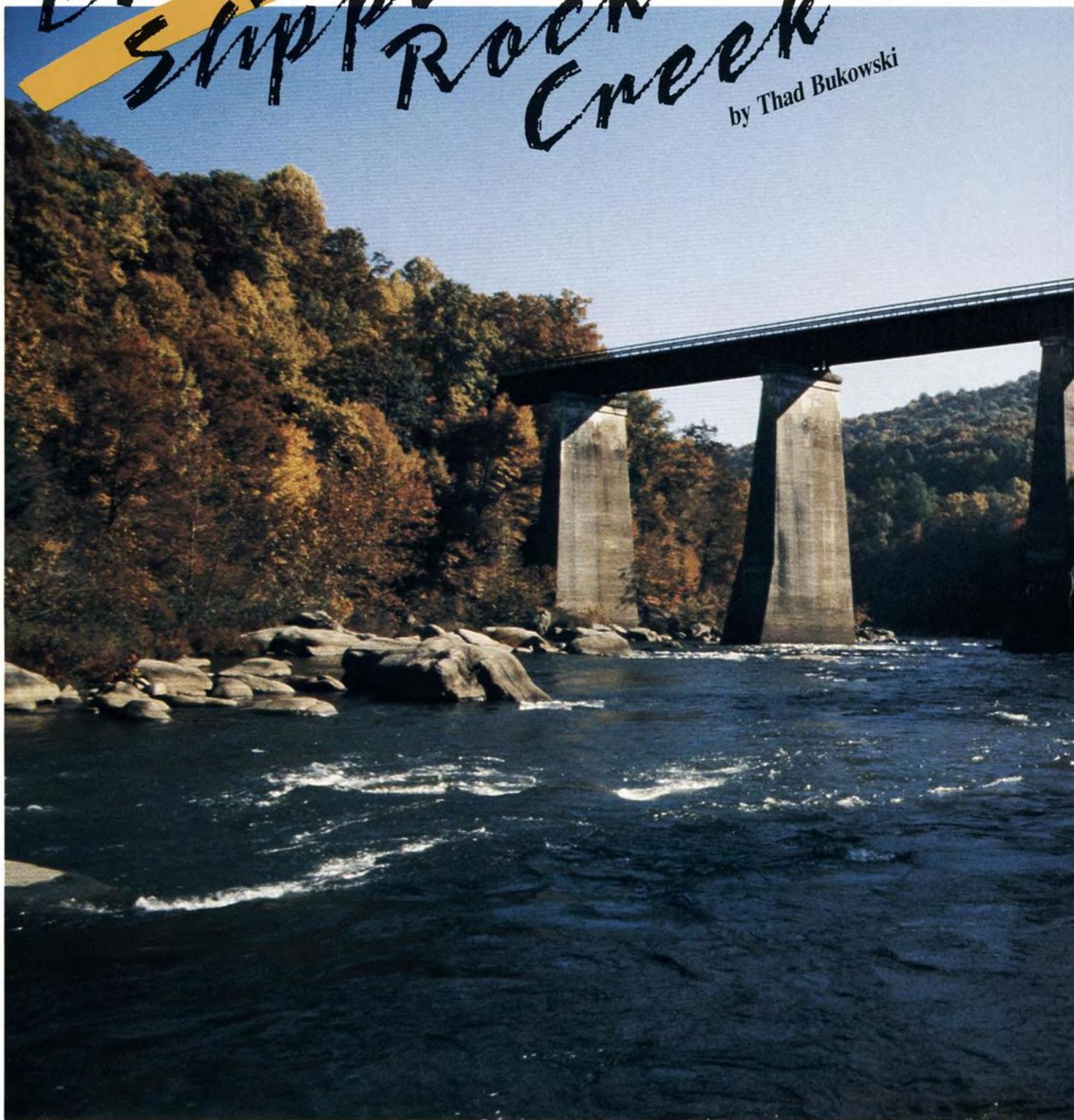
If a fire breaks out while you are under way, slow or stop the boat immediately. Wind from the boat's motion feeds the flames. Keep the fire downwind to prevent it from spreading to other parts of the boat. If the motor catches fire, shut off the fuel supply immediately.

Before a fire breaks out, you should already have an emergency plan. Remember that many fires can be put out if you act immediately. Do not wait until a fire starts to read the directions on your fire extinguisher. Know these procedures in advance. Tragic accidents involving fires aboard boats can be prevented. 

Cheryl Kimerline is special programs coordinator of the Commission Bureau of Boating.

Paddling Slippery Rock Creek

by Thad Bukowski



The Slippery Rock Creek gorge on the southeastern border of Lawrence County is one of Pennsylvania's finest outdoor treasures. It is often used for canoeing and kayaking, rappelling while studying its geology, trout fishing, and nature photography. Shutterbugs often want to capture its enthralling scenery during every season.

Artists often set tri-podded canvases along its shores and try to recreate some of its startling rock-strewn shores, boiling waters and outcropping cliffs near an old mill, which is its centerpoint with a nearby covered bridge.

The stretches from the Route 422 bridge through McConnell's Mill State Park for perhaps a dozen miles downstream are high-

point pleasure spots visited often by picnickers, boaters and nature lovers. Experienced canoeists and kayakers anticipate special moments on Slippery Rock's wild spring waters, while the more cautious visit it throughout the warmer, quieter paddling season.

In fact, Slippery Rock Creek may be canoed throughout the year. A group led by Pete Curdo and known as the Bruin Boys from nearby Butler tour it regularly. They make a special point of paddling down the stream each year in a group on the first day of each deer season from the park office to Eckert's Bridge, the second downriver takeout point. What might be more unusual is that the group is so enthralled with the stretches, they hike along the nature trail that parallels the stream for more than two miles back to their entry point.

The Slippery Rock gorge, according to park superintendent Jerry Bosiljavec, was visited last year by more than 28,900 picnickers; 2,400 boaters; 6,000 anglers; 26,800 interested in environmental education and 38,900 hikers. Even some 2,870 climbers tossed ropes along its craggy hillsides, many of them coming from nearby Slippery Rock University for geological studies.

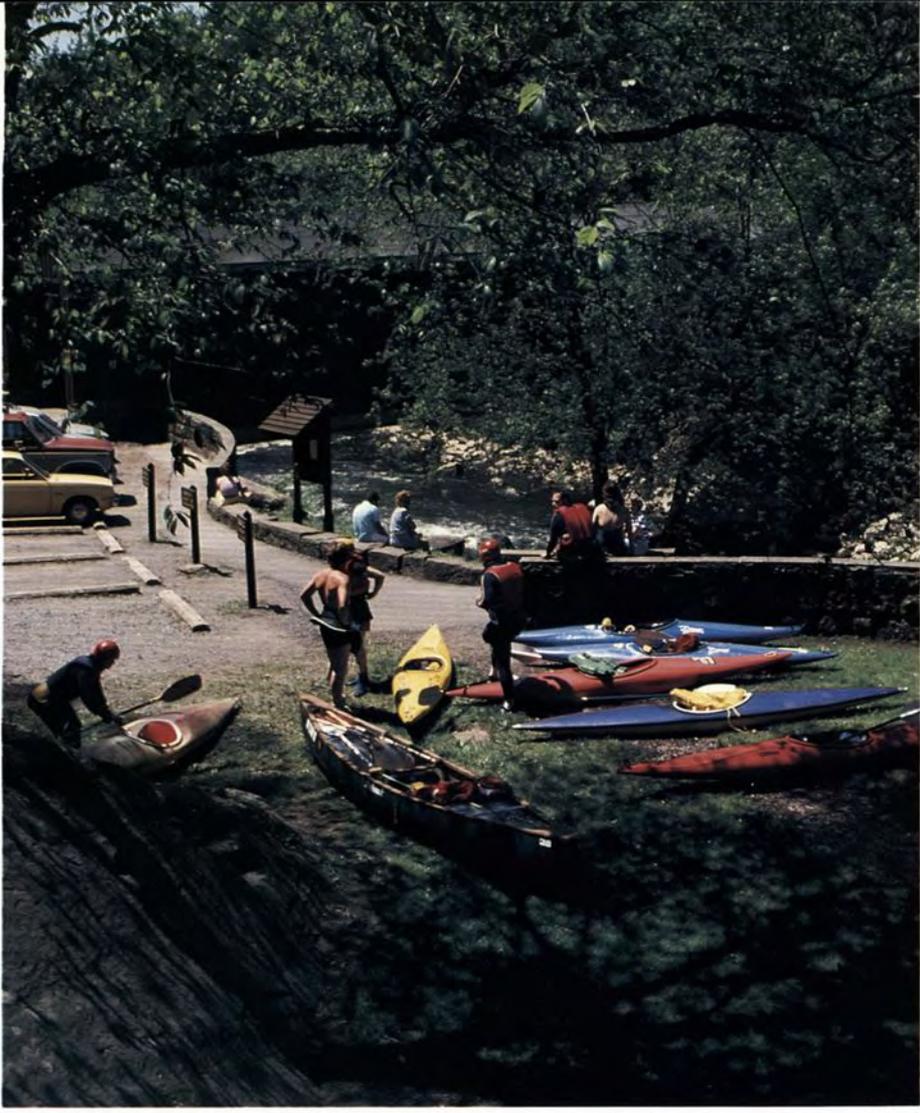
Glaciation

The striking scenery and deep Slippery Rock gorge flowing through McConnell's Mill State Park, according to geologist Kent Bushnell of Slippery Rock University, is attributed to glaciation that occurred several 10,000 years ago. Over the past 40,000 years, several large continental ice sheets covered most of the area, damming nearby Muddy Creek and Slippery Rock Creek, forming two large glacial lakes. One lake has been reconstructed by man as 3,225-acre Lake Arthur. As the ice melted 20,000 years ago, water drained ever more rapidly into the Slippery Rock Valley with enough energy to enlarge and deepen the gorge quickly.

Many of the outcrop rocks and slump blocks of sandstone and conglomerate contain crossbeds, a feature that gives geologists a clue to the environment of the area 300 million years ago, according to Professor Bushnell. The combination of rapids and eddy currents often makes for an almost treacherous water course in part of the creek's winding, bouldered sections, particularly during springtime rains. Yet this challenge is what experienced canoeists and kayakers seek.

For a number of years until interest faded,





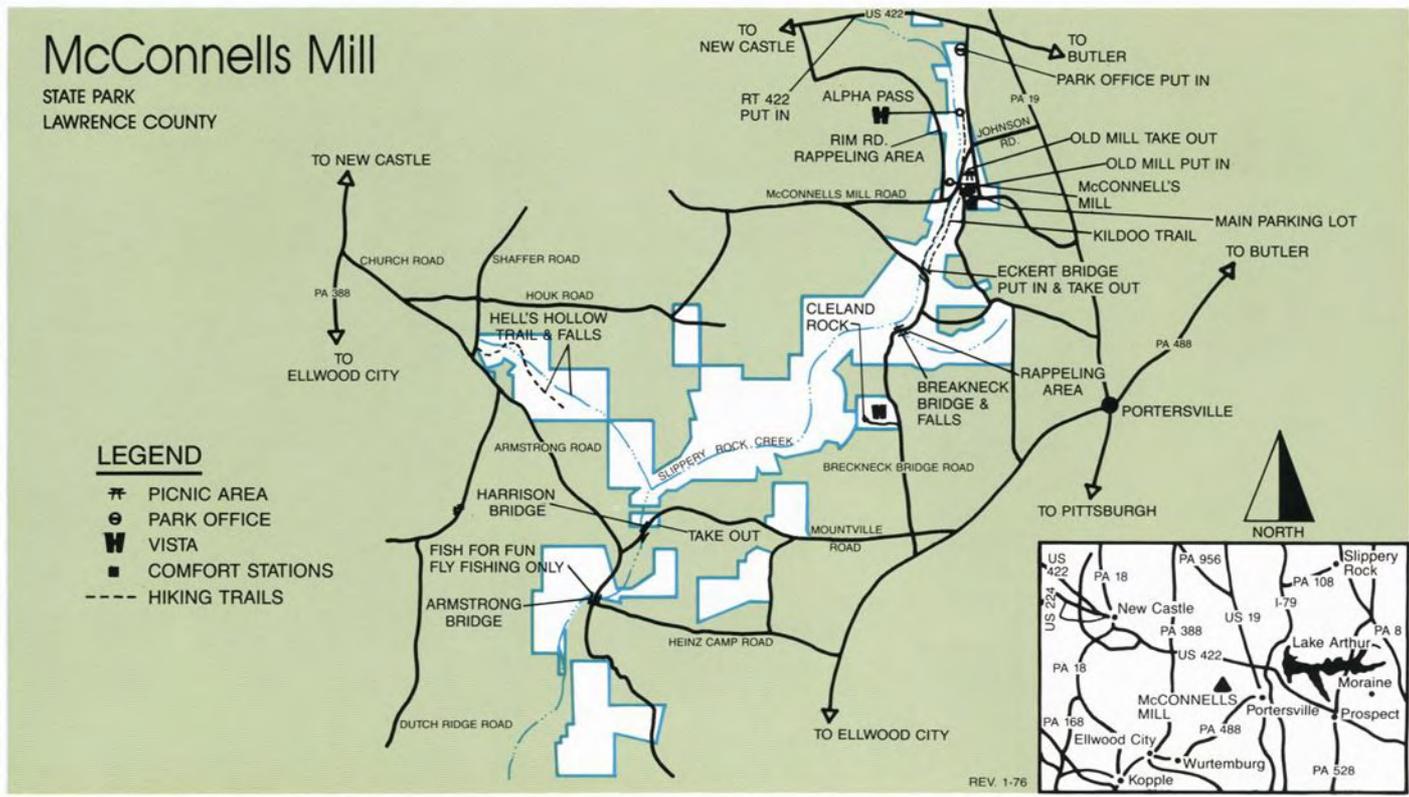
water was drained from nearby Lake Arthur through Muddy Creek, which enters Slippery Rock Creek just upstream of the park, to add to the Slippery Rock's natural waters for Olympic-type canoeing, kayaking contests and water slalom events. At such times Muddy Creek's water upstream ran bankful.

Superintendent Bosiljavec reports that such events could still be conducted with special planning, a lot of lead time, and permits for Lake Arthur water release from the Pennsylvania Fish Commission.

He also reports that considerable rappelling, or "cliff climbing," occurs in the gorge, conducted by special school groups, usually from local colleges, explorers clubs of the Pittsburgh area and the American Youth Hostels of Pittsburgh.

"Even U.S. Army Reservists train here sometimes, rock climbing the cliffs that

McConnells Mill State Park is in Lawrence County near the intersection of Route 19 and U.S. Route 422. It's some 40 miles north of Pittsburgh. The park features rappelling, fishing, rafting and kayaking. For additional details on the park, contact the park superintendent at RD 1, Portersville, PA 16051. The phone number is 412-368-8091.



The most fascinating whitewater of the gorge generally rates Class III and sometimes Class IV.

extend steeply at least 60 feet in some areas of the gorge and go down 400 feet in one section," Bosiljavec says. Sections for such rock climbing activity are off Rim Road and the Breakneck Bridge slopes.

Paddling places

The canoeing and kayaking endeavors center along a number of put-in and take-out points that total about 6½ miles of water. At least one absolutely necessary portage is located at the old mill dam. The first upstream put-in point for canoeists and kayakers is somewhat steep at the Rt. 422 bridge or alternately just a bit downstream at the park office. Its first takeout is at the old mill dam.

Especially exciting water continues from below the old mill dam to a take-out nearly two miles farther downstream at Eckert's Bridge, where the nature trail parallels the creek.

From Eckert's, canoeists can continue down through the picturesque Breakneck area and on to waters that become more placid, ending at the Harris Bridge take-out. Canoeing can continue, however, for a considerable number of miles toward Ellwood City and the confluence with the Connoquenessing Creek, which flows through that community. Upstream, the Slippery Rock also extends for some 15 or more miles of picturesque quiet water. Most of Slippery Rock's shores have hardwoods or hemlocks.

The most fascinating whitewater of the gorge generally rates Class III and sometimes Class IV water. Dr. Jan Matthew, last year's president of Pittsburgh's 400-member Three Rivers Paddling Club, says that this part of the stream provides the most exhilarating excitement in her life.

"Sometimes in the springtime it's seven foot, Class V water and is a real joy for the most experienced kayaker," she notes. Dr. Matthew says that many of the 400 club members repeatedly use the Slippery Rock Creek for kayaking and canoeing.

The club, in fact, has a hotline number that individual members call to learn if, when and where they'll be on the stream on any weekend. Others interested in canoeing or kayaking call the number and a taped message provides information for all where to gather as a group for a trip.

Upwards of half the club includes kayakers who run plastic fiber boats, while other members prefer to run the courses in "shoe horns" or C-1 and C-2 decked canoes. The former carry one paddler while the C-2s carry two. Canoeists kneel while kayakers tour in sitting positions with legs extended.

Tim Chase, club treasurer from nearby Grove City, says that he paddles the waters in his C-1 perhaps more than any other member.

Chase evaluates Slippery Rock waters somewhat by folks he's met there and talked with on a number of occasions.

"Paddlers come from Ohio, Virginia and West Virginia. Some who come from as far as Indiana, Michigan and Wisconsin say that this stream is the closest good challenging whitewater they can find."

Dr. Matthew welcomes those who might be interested in joining Pittsburgh's club. They can do so by reaching Marian Carson at 412-335-8324. Membership costs \$7 yearly. Marian's husband, Dennis, is the new 1988 club president.

The Pittsburgh Club conducts a training clinic each year and holds outings each month, frequently to other areas. The training includes an instructor's clinic on paddling skills, rescue work and river safety during the first weekend, usually in June. Then the instructors are used on a two-to-one basis to teach others interested in improving their paddling skills.

"Over 70 students participated in our learning seminar last June at a two-day event," Dr. Matthew said.

Outings held by the club include visits to the Cheat, Tygart, Stony Creek near Johnstown, Youghiogheny, Potomac and the Gauley River area of southwest Virginia.

The old mill at McConnell's Mill State Park is undoubtedly responsible for the creation of the scenic park that now provides its unusual recreational activity. The park, situated approximately 40 miles north of Pittsburgh in a secluded section along the Lawrence County line, was dedicated as a national natural landmark in May 1974.

In 1868, McConnell's grist mill was built there, with power for water turbines supplied from a dam constructed at the spot. The mill, which operated until 1928,

was used to grind wheat, oats, buckwheat and corn. A covered bridge was built in 1874 over the gorge only hundreds of feet downstream from the mill.

After years of profitable operation, technology finally caught up with the old mill and it was closed in 1928 after more than a half-century of success.

The mill and surrounding property were eventually conveyed to or inherited by Thomas H. Hartman, grandson of Thomas McConnell. Realizing the aesthetic value of the land, Mr. Hartman opened the area to the public to use and enjoy. In 1946 he sold the land to the Western Pennsylvania Conservancy with the wishes that it be preserved for all generations.

At a price less than cost, the Western Pennsylvania Conservancy began deeding the McConnell property, coupled with other parcels of land, to the Commonwealth of Pennsylvania, and on October 5, 1957, it was formally dedicated as McConnell's Mill State Park.

Today the park totals more than 2,500 acres, a considerable amount of the area maintained in its natural state for the preservation of its flora and fauna.

Authentic reconstruction of the grist mill and replacement of the dam, originally built out of logs and large boulders, was completed in 1963.

Daily readings of water levels in the park go to the National River Service at Pittsburgh where a special weather channel reports for interested paddlers what stream readings are on each day so that they may catch it when they believe it is right for their particular recreational pursuit.

For Ohioans who might be interested, the nearest out-of-state club that also frequently paddles the stream is the Keel Haulers Canoe Club of 27405 Detroit Road, Westlake, Ohio 44145, led by president Ed Berneike. The phone number is 216-861-8961.

Visitors to this area have two campsites located right at the upper put-in points near the Rt. 422 bridge at Rose Point, PA. Nearby motels and restaurants are also available along Rt. 422 and the nearby Rt. 19 crossroads. First-time visitors to the area may receive information about paddling procedures, parking and other facilities from the park office located along McConnell's Mill Road, the first road just east of the Rt. 422 bridge, or by calling the park office at 412-368-8091 at Portersville, PA. 

Eyewear for Boaters

by Sal Fertitta

Take a look at the folks in the next boat you pass. The bet is dollars to doughnuts that they are all wearing sunglasses if it's daylight and bright, probably just like you are, but the chances are that about 50 percent of those glasses are not doing the job intended—protecting the eyes from damaging ultraviolet (UV) radiation.

When it comes to eyewear on the water, there are as many styles and types of sunglasses as there are boats, but the factors that make one better than another are little understood. Many of our boating friends who wouldn't be caught aboard without their favorite "shades" have no interest in optical distortion, blue light cutoff, or light spectrum transmittance as long as their eyewear is attractive. And that just may be the burning issue...and the burning I speak of is harmful to eyes.

The glare gamut

Anyone who's ever been aboard a boat on a sunny day knows the power of the sun reflecting off sparkling waters or bouncing off the white deck. We squint, we tear, we shade our eyes. Our sight is hampered sometimes so that navigation becomes dangerous. What we do not see, however, are the dangers of those invisible UV rays that can cause a number of eye disorders—some of which are growths and some of which are slow deteriorations including, some experts say, brown cataracts.

There is wide disagreement about what part of the spectrum and how much exposure causes what particular disease, but that pales in comparison to the overwhelming agreement that overexposure to sunlight and its attentive UV radiation is accumulative and that without proper eye protection damage is inevitable.

Compounding the problem is the time lag of four to eight hours after excessive exposure before we become aware of painful symptoms that announce that our eyes have been damaged—scratchy dryness, degraded vision, or "lid burn," an irritation and inflammation around the eyes.

But what is more insidious is that not all sunglasses offer the same protection. Some darken but do not shield against UV, and some may be too lightly tinted



to reduce glare adequately. Others may even distort both color and vision.

So it's not enough just to don shades and hope for the best. There are hosts of poorly made sunglasses on the market and there are widely held misconceptions about them as well. To avoid the first and clear up the second, here are features to look for in the types of lenses generally found in protective eyewear.

Tinted lenses. There is no one tint that's right for everyone. People have varying sensitivity, reacting quite differently to the same amount of glare. Because one tint is darker (has greater tint density) than another doesn't necessarily mean it protects better.

Light tints are best for hazy conditions; darker ones for bright sun. Generally, a visible light transmission rate (the percentage of light a lens allows through it) of between 15-20 percent is the norm.

Coloration is even more diverse than tint density. Yellow (shooting glasses) is still the frequent choice for haze. Popular grey with a touch of red (which I prefer) is the all-around choice because it doesn't distort color (but it does reduce contrast). The newer tans have good color definition and seem sharp in contrast, but though I've tried a few of these, I can't seem to adjust to the hue. Green, which naturally screens out UV, seems to have fallen from grace.

Polarized lenses. These provide the maximum glare protection, particularly in lighter tints, and also give excellent penetration through water and haze, which is why fishermen love them. They filter the light scattered by the water's reflective surface to permit fish to be seen in the shallows. Polarization does not block UV, however, unless so treated like other lenses.

Phototropic or photochromic lenses. These alter tint density to conform to light conditions. They are made only of glass, and because tiny particles are encapsulated inside, the lenses weigh more than ordinary glass. I find them a perfect "second pair" or backup to regular glasses, although they don't become as dark. Some are slow to change (about 5 minutes), and some stay on the lighter side when behind laminated glass windscreens, which block many light wavelengths before they can cause the lenses to react.

It is folly to believe that any set of lenses is better than nothing at all, because glasses that just darken cause the irises to open to accept more light and more UV as well. So, in such a case, ordinary sunglasses can be more harmful than uncovered eyes.

With or without correction, boating eyewear must perform adequately on many levels. Glasses must permit you to see clearly with definition and without distortion while reducing glare, while protecting against harmful rays, while remaining durable and easy to care for, and while flattering your appearance so you will be prone to wear them—a challenging combination of properties.

All sunglasses are made of either polished glass, polycarbonate, or other plastics such as CR39. Glass lenses provide better optics and are scratch-resistant, but must be hardened to meet federal standards for shatter resistance.

Polycarbonate lenses are ground from flexible plastic of near-comparable optical quality to glass, are lighter and stronger, but are more easily abraded. Other plastics, such as acrylics, are generally of less quality and should not be considered for boating eyewear.

Whatever lens material you choose, quality does make a difference. Distortion should not be present. Aside from the UV protection that is generally indicated by a



Impact resistance is important for safety reasons. All lenses must meet minimum standards. Look for those that exceed the standard for maximum resistance to impact.

hang-tag or some statement from the manufacturer and should be paramount in your selection decision, look for quality pluses like ventilation to reduce eye tearing, interchangeable lenses for all weather conditions, and quartz coatings that enhance scratch resistance.

There are so many variations on the sunglasses theme that choice is not easy. With so many models available, from the traditional styles to sportglasses with catchy names and sleek lines, even price, which ranges from about \$15 to \$160 or more, is no fair indicator of high performance.

What's a buyer to do? Look for manufacturers' labels and hang-tags and discuss your needs candidly with your optician. Here's what you want to know:

Optical distortion must meet one of two American National Standards Institute (ANSI) standards—fashion or industrial. The second permits the least distortion.

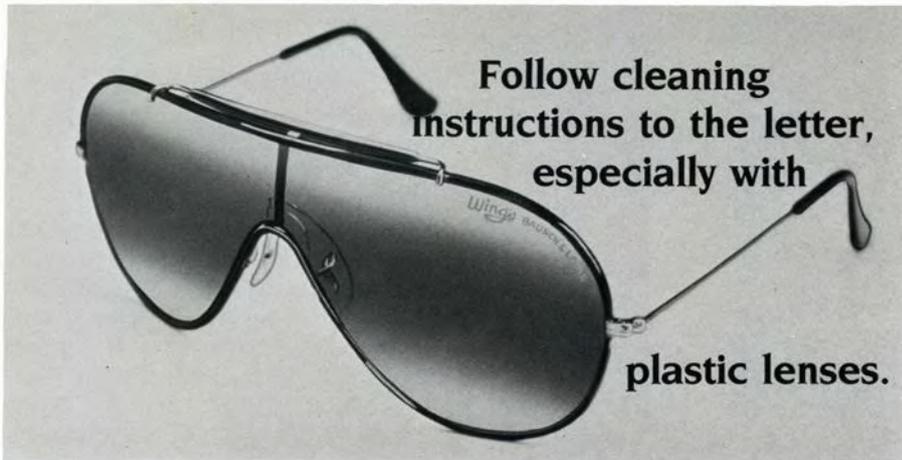
Color neutrality is the color shift or lack of it caused by light transmission through a lens. There is no good or bad, only differences depending on usage. When wavelengths are evenly filtered as they are with a gray lens, color perception is most balanced.

Impact resistance is important for safety reasons. All lenses must meet minimum standards. Look for those that exceed the standard for maximum resistance to impact.

Light spectrum transmittance is the percentage of each color in the spectrum, from UV to infrared (IR), passing through a lens. Say no to high percentage at either end and low in the middle where the eyes—because the iris will open wide to receive more light—are most susceptible to UV harm. Debate continues over whether a portion of the "blue light zone" and whether IR rays are dangerous to the eyes. Until proof is positive, quality lenses may be the only safeguard currently available.

Style is important only because of lens and frame configuration, not because of attention-getting flair. A wrap-around style or side shields help keep out rays that enter from the sides and reflect back from the insides of lenses. Such side-styles, while they enhance protection, should not be opaque or so dark that they block peripheral vision.

Price is never a criteria when it comes to your eyes, but it also is no guarantee of features and benefits in sunglasses. If the manufacturer or optician doesn't supply adequate information about the other features, don't buy. That is your best protection.



Contacts

I've been wearing glasses for 10 years longer than the 35 years I've been boating, and I'll tell you flat out that contact lenses are the best thing to come along for my-optic boaters since the time of Confucius (551–479 B.C.) when the Chinese began using sunglasses. Contacts, without doubt, offer the most benefits for boaters who need vision correction because:

- They don't fog when you go from cold to warm, or become smeared with raindrops.
- They correct refractive error and distort less than glasses, and usually improve distant viewing.
- They don't slide down your nose, or fly off your face, or end up beneath you when you sit, or get in the way of your binoculars.



Of the two types, hard and soft lenses, I'd opt for the latter because, in my case, they are more comfortable. Hard lenses are cheaper, they sometimes offer slightly clearer vision, and they last longer. But they are harder to fit and are less comfortable for many people. The extended-

wear soft type do relieve a lot of the daily care fuss and bother, but they are fragile and relatively short-lived.

Contacts have drawbacks, of course, such as the need to tote chemicals for their care and definitely, the need to carry eyeglasses as backup because of their fragility. Perhaps the most troublesome drawback is "spectacle blur," that condition of unclear vision that exists for 20 or so minutes (but goes away) after contacts are removed.

Still, those tiny plastic wafers have brought such freedom of choice that they are worth their expense and trouble. While contacts do the correcting, I'm free to select dark or light or gradient-tint or photochromic sunglasses to meet any condition, giving me options that are less expensive and weigh less than corrective lenses of like variety. And regardless of what anyone says, I'm convinced my visual acuity with binoculars is much improved.

Wear and care

Boaters who have uncorrected normal vision should carry several pairs of sunglasses aboard to meet changing light conditions just as they would carry extra clothing for changing weather conditions. The "inventory" should include sunglasses with 80-90 percent absorption for bright days, photochromics for average days, an amber or yellow pair to cut blue light on hazy days, and polarized lenses (make sure *all* have UV absorption) for fishing and reflected glare.

Those boaters with less than normal vision must add either contacts or corrective lenses to all the above, and add at least one pair of untinted glasses as backup and for night viewing. In my experience, clip-on lenses are more bother than they are worth—always out of kilter or lost—but if you can live with them, they can add

flexibility to the light/dark mix. I've found typical gradient lenses, although I do wear them off the water, not particularly beneficial on a boat because while the darker band, usually at the top, does cut overhead rays, the lower, lighter area admits glare from deck or water to cancel out the former.

Likewise, mirrored lenses, except for the double-gradient type (lighter band in the middle), have always seemed to me to cut too much light. Real or imagined, I feel mirrored lenses cut contrast even more than gray tints do, a loss that is bothersome especially while fishing.

All glasses aboard should be properly protected in hardcase holders and/or stored in a safe, dry cuddy. If you have a large boat, a "string" of pockets in one cloth holder works great if the holder is secured to a bulkhead or any place where it can't fall or be knocked around. Tossing glasses on the cabin top or stashing them between cushions is courting disaster. A safety cord or lanyard around the neck is the way to go both for safety and convenience.

Naturally, reasonable care is required to keep your eyewear performing well. Follow cleaning instructions to the letter, especially with plastic lenses.

Good care begins with your purchase. It's wise to add abrasive-resistant coatings to plastic lenses, add extra non-reflective coatings to the *inside* of lenses, and even add a laminate of plastic to glass for added strength. These options are available through your optical supplier.

Choose frames that are sturdy and fit comfortably—not so thin that they bend in the wind and not so heavy that they irritate the nose. Some "sport" glasses have special, rubber-like cushioning at the bridge and ears to soften the effect when glasses are inadvertently struck. These protective touches as well as hinged temples aid durability. Select frames that have replaceable screws and carry a repair kit—extra screws of proper size and an eyeglass screwdriver—and check for tightness from time to time.

With all the variety of types and styles of glasses available, there are no hard and fast rules for either selection or use, but I offer this closing advice: When you can see your shadow—like a groundhog—it's time to don eye protection. When you see your eyes behind your lenses, the protection is probably not sufficient. And finally, for the best advice of all, find an ophthalmologist, optometrist, or optician who is a boater and follow his/her example or advice. 

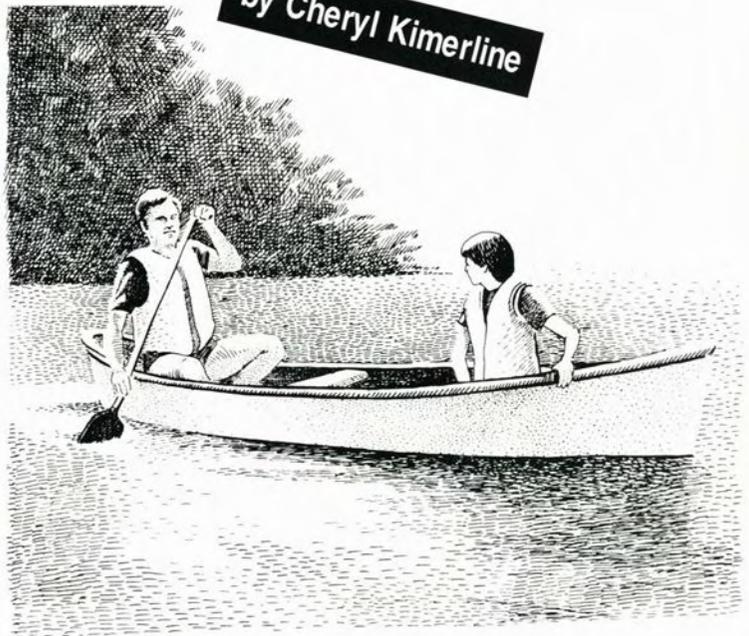
KIDS PAGE!

by Cheryl Kimerline

River Fun

What could be more fun than a canoe trip down your favorite river on a nice summer day? Plan a float trip with your family or friends. Remember to pack your fishing reel and lunch. Listed below are some river safety tips. See how much you know!

1. PFD stands for P _____
F _____ D _____.
2. C _____ and nonswimmers must wear PFDs when boating.
3. If you fall into moving water, keep your f _____ pointed downstream.
4. If you would tip over, stay with your b _____.



Pennsylvania Rivers and Streams

You are planning a fishing and boating trip. Pennsylvania has over 45,000 miles of rivers and streams. See if you can find the names of 18 of Pennsylvania's rivers and streams listed below in the word search. They are spelled backwards, diagonally and up and down. Which is your favorite?

For answers to "Kids Page" hold this section in front of a mirror.

Answers to Kids Page "River Fun":
 1. Personal flotation device;
 2. children; 3. feet; 4. boat; Answers to Kids Page "Pennsylvania Rivers and Streams": 1. Susquehanna; 2. French; 3. Clarion; 4. Loyalsock; 5. Delaware; 6. Red Bank Creek; 7. Allegheny; 8. Ohio; 9. Beaver; 10. Schuylkill; 11. Youghiogheny; 12. Mahoning; 13. Monongahela; 14. Juniata; 15. Lehigh; 16. Crooked Creek; 17. Buffalo; 18. Pine

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Sailing Faster

by Bob Ricketts

The date was August 22, 1851, the race was around the Isle of Wright and the sailing vessel was *America*, skippered by Dick Brown. Since the beginning of what became the "America's Cup" race, the United States has dominated the series until the early 1980s, when the United States lost to the Australians off Newport, Rhode Island. Since the break in that 130-year winning streak, the 12-meter syndicates have been spending millions of dollars to train the crews and improve the maximum speed potential of their 12-meter yachts.

Many Pennsylvania sailors don't own 12-meter yachts or choose to spend their money in that manner, but they still like to have their vessels sail as fast or faster than the other vessels out on the water. Let these ideas help the skippers and crews who wish to maximize the speed potential of their sailboats without buying new boats or spending millions on the latest high-tech gear.

One of the best ways people learn how to sail faster is to watch the nearest boat that is passing or pulling away from their boat. Try to see what the other boat's crew is doing differently from what you're doing. Is the crew positioned differently? Are the sails trimmed at the same angle to the apparent wind? What is the position of the centerboard and rudder?

These are just a couple of the basic questions that should be asked on any point of sail and if they are answered correctly, your boat will sail faster!

You can improve your sailboat's performance by doing several maneuvers that involve no high-tech gear or extensive training—just you and the understanding of the following maneuvers. The simple maneuvers or skills you can do to improve the speed of your sailboat are:

- understand the winds and their effect on the main and jib sails and on the boat.
- proper sail trim at all points of sail.
- boat trim and balance.
- centerboard adjustments for maximum efficiency.
- efficient use of the rudder for steering.

Understanding the winds

Good sailors understand the wind and how it effects the sails. They know where the wind is coming from at all times and are constantly checking to see if and when wind shifts occur. Keeping a constant eye on the wind pennants or telltales around the boat can tell you where the wind is at any given instance.

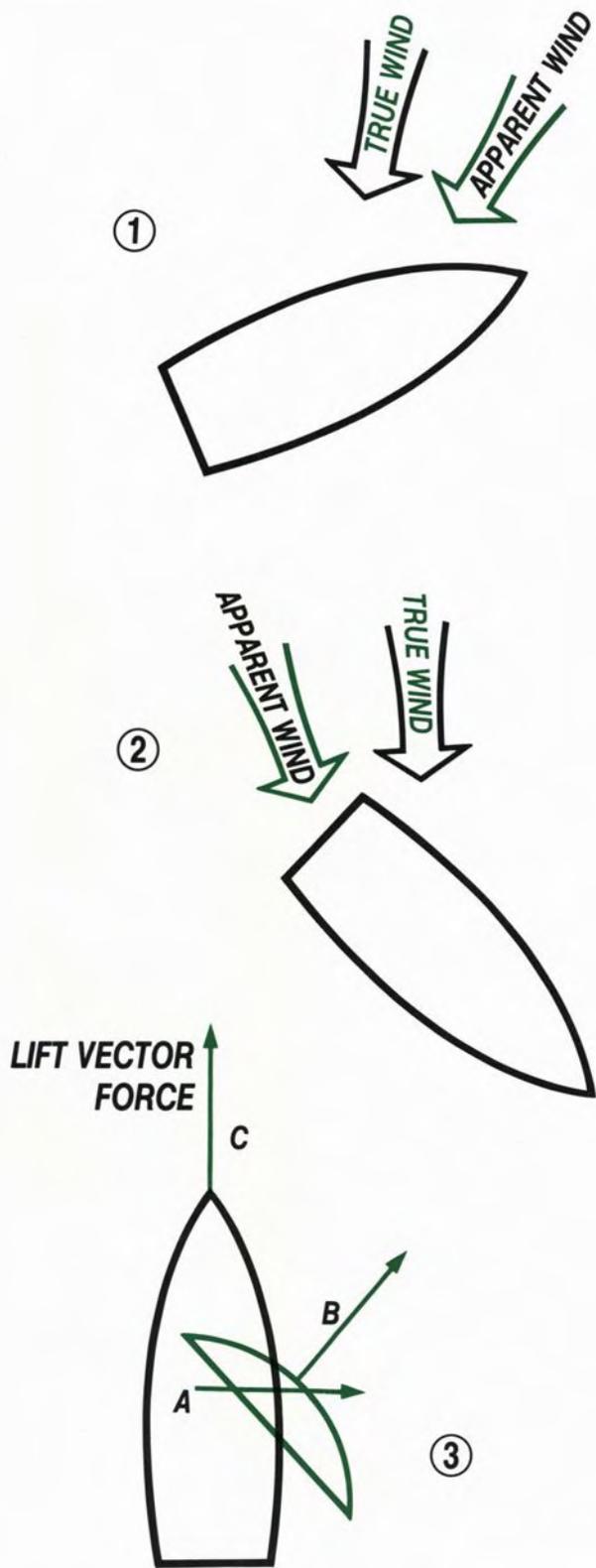
Telltale are small pieces of yarn that secure to the outer shrouds and stays. The telltales react to the wind shifts immediately and a watchful skipper notes the changes in the wind direction and makes the necessary adjustments.



The wind you feel and see is the apparent wind. Reading the immediate wind shifts improves the speed of your sailboat.

The reason for having multiple telltales around a boat is to be sure that the telltale observed by the skipper is not influenced by deflected air from the sails. Hence, the windward telltales are often the best to observe the wind direction. Remember that the telltales reveal the apparent wind direction, which is a result of the true wind direction and the wind created by the moving boat (wind of motion). Therefore, you should trim your sails to the apparent wind.

The apparent wind can vary in its speed, depending on the specific point of sail your boat is sailing. On a close-haul point of sail, the apparent wind is greater than the true wind because of the relationship to the wind of motion. Furthermore, when the boat sails away from the true wind, or "runs," the apparent wind



is less than the true wind because the boat moves in the same direction as the true wind.

Remember that the wind you feel and see is the apparent wind. Understanding the direction of the wind is critical to proper sail trim. Reading the immediate wind shifts improves the speed of your sailboat. (See figures 1 and 2, above)

Understanding what happens when the wind moves across the sail is important to maximizing the speed of your boat. The main and jib sail are designed and sewn with a curvature built into the sail area, similar to an airplane wing. When air currents flow over the sail, a pressure difference occurs and *lift* is the result.

Lift is the key to improving the speed of your sailboat. The greater the lift generated from the sails, the faster the boat moves through the water.

One key point is that before your boat begins to move forward, the sails must "take shape" from the wind, creating lift from a theoretical point referred to as the center of effort. The lift vector is at an angle to the forward direction of the boat. The reason the boat does not move significantly in the direction of the lift vector is because of the centerboard. Remember that the centerboard is used to resist the lateral or sideways movement of the boat. To maximize speed, the sideways or lateral movement should be minimal and the lift should be maximal, so the result is a faster forward movement. (See figure 3, below at left)

Proper sail trim

Sailors often cast the lines off from the dock, set the sails and then cleat off the sheets and sail away. This procedure is fine if you are out for a pleasurable afternoon sail. However, if you are concerned with maximum speed, constant attention must be given to sail trim.

Efficient sail trim is gained when the air flows smoothly over both sides of the sail. The skippers of fast-moving boats are constantly aware of the direction and strength of the wind and are making constant changes in the position of their sails relative to the ever-changing wind.

Many books have been written on the subject of how to trim sails. Generally, good sail trim occurs when your sails are out as far as they can be without luffing or losing the wind.

Many novice sailors can easily recognize a sail that is luffing. However, they have a tendency not to recognize an over-trimmed sail. An over-trimmed sail causes the boat to heel excessively, thus increasing the lateral movement of the boat. The result of either situation is the loss of boat speed.

Correcting the situation is basically simple. Let the sheets out until the sail luffs, and then sheet in the sails to the point at which they take shape and the luffing ceases.

On a sloop-rigged sailboat with a jib and mainsail, it is important to trim the jib sail first and then the mainsail. Some skippers have a tendency to over-trim the jib sail, which creates a backwind on the mainsail.

When the jib and mainsail are properly trimmed in relationship to one another, the wind flows smoother and faster over the leeward side of the mainsail, creating what is referred to as the "slot effect." Air flowing smoothly through the "slot" should result in generating greater lift, which directly affects the speed of the boat. (See figures 4 and 5 on page 16)

An important point to remember is that sail trim is effected every time the wind shifts direction or the boat changes heading or course. Many times a skipper alters the course of the boat without adjusting the trim of the sails. However, on a close-hauled point of sail or beat, the sails are trimmed in tight and the skipper controls the angle of the boat to the wind. If the sails luff, the skipper should "head off" or steer away from the wind.

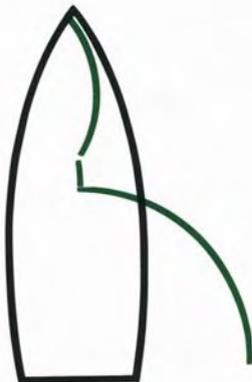
Conversely, if the sails are over-trimmed, causing excessive sideways movement or heeling, the skipper should "head up," or steer toward the eye of the wind. When trimming the mainsail for the close-hauled point of sail, be sure not to pull down on

Placement of your body can make a big difference in the boat's speed. On most small boats, the body weight should be near the center. Hiking out, as this picture demonstrates, may be necessary to keep the small boat sailing straight up, or flat on the water, for maximum speed.



PA Fish Commission file photo

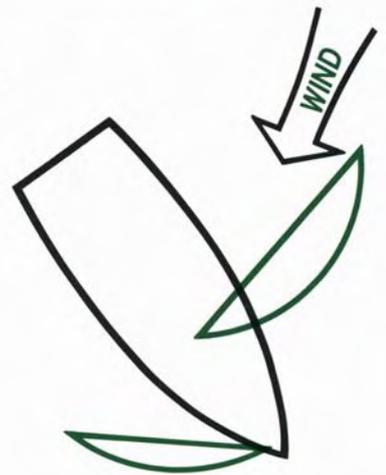
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the boom with the main sheet. This causes the mainsail to flatten, reducing the curve or belly of the sail, resulting in less lift or speed.

Sailing downwind or "running" sometimes requires a modification to the typical positions of the jib and mainsail. If both sails are on the same side, the mainsail "blankets" the jib sail, making it unable to take the proper shape. Therefore, when the wind is coming over the boat stern, it often becomes necessary to set the sails in a "wing-on-wing" position. Keeping both the main and jib sail trimmed properly at all times is important to maintain maximum speed. (See figure 6, below at left)

Depending on the design of the standing rigging, it is sometimes difficult to keep the jib in a "wing-on-wing" position. This situation can be overcome by using a spinnaker pole to help "wing out" the jib if the boat is equipped with the necessary equipment and rigging. Still, the skipper and crew should be skilled in the maneuvers necessary to set a spinnaker pole.

Another maneuver used to help keep the jib "winged out" is to sail with the wind coming over the stern quarter on the same side as the mainsail. This point of sail is referred to as "sailing by the lee." This position helps keep the jib full of wind and the weight of the boom keeps the main on the windward side of the boat. Extreme caution must be taken to avoid an accidental jibe. Remember that if things get out of control, push the tiller toward the mainsail to avoid the boom flying across the cockpit (accidental jibe). (See figure 7, below at left)

Boat trim, balance

Many boats sailed on Pennsylvania lakes do not have heavy-displacement hulls, but rather light-planing hulls. Because planing hulls do not have the heavy ballast located on the keel or centerboard, the body weight of you and your crew becomes important. Placement of your body can make a big difference in the boat's speed through the water.

The exact positioning of your body weight takes some trial and error, but on most small boats the body weight is generally near the center of the boat. Specifically, your weight should be placed so that the transom just touches the water and the water flows smoothly from under the hull.

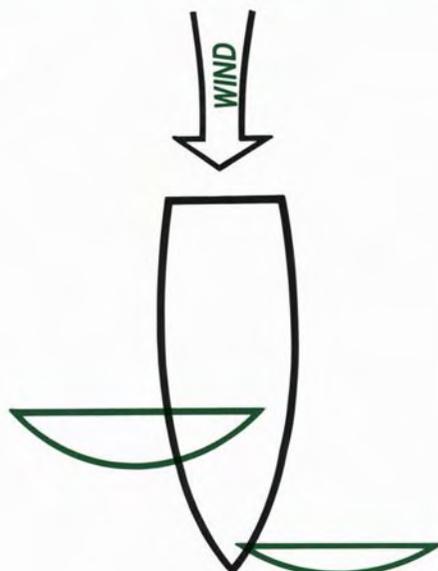
Skippers often have a tendency to position themselves too far aft, causing the stern to drag the water. This dragging action greatly reduces the hull speed, especially when the winds are light and variable. One of the reasons why sailboats have long tillers is to "force" the skipper to be forward to balance the boat better.

Personal body weight is not only used to trim the boat fore and aft, but it is also used to keep the boat from capsizing in heavy winds. Many sailors like to sail "on the edge" (that point when the boat is ready to capsize), but that probably is the most inefficient position for the boat to achieve the maximum potential speed. Small sailboats are generally designed to be sailed "straight up" or flat on the water.

To accomplish this, use your body weight to "hike out." Hiking out is a maneuver that allows you to move your weight out over the gunwales and beyond. The farther you can move your center of gravity outboard, the easier it is to keep the boat flat on the water, maximizing the hull's speed and allowing all the sail area to be used.

Some boats have hiking straps or trapezes that allow you to move your center of gravity out even farther, making it easier to keep the boat straight up even in heavy winds. Make sure your weight is firmly anchored under the hiking straps or you could

7



go overboard. As the wind decreases, be sure to shift the weight back inward to avoid a capsize to windward.

A finer point is leeward heeling, involving use of your body weight to increase the boat's speed especially on days when the wind is very light. This occurs when the body weight is shifted slightly to the leeward side of the boat so that the boom is in the proper position when a puff of wind comes along. When the wind blows, first the boom swings to the leeward side, the sail takes shape, the boat heels slightly, and finally the boat moves forward. Leeward heeling eliminates steps one, two and three. Always be ready to shift your weight back to the windward side if the puff is stronger than anticipated. Leeward sailing should only be used by the experienced skipper, not the beginner.

Sailing downwind, the skipper and crew should be opposite each other (skipper always facing the boom) to reduce the wallowing effect on the boat. When a boat rolls from side to side, it has a tendency to shake the wind from the sails, which results in decreased speed. Don't forget to keep the boat trim fore and aft.

Tacking to downwind is a skill that separates the abilities of skippers.

Proper position of you and your crew is important to maximizing the boat's speed. It doesn't involve any new equipment—just an understanding of how the body weight can be used to make the boat go faster. Remember to keep the boat trim (fore and aft/port and starboard) and straight up.

Centerboard adjustments

The centerboard is designed to reduce the lateral and sideways movement of the sailboat. When the centerboard is completely down, it might comprise 30 percent of the wetted surface area, and the greater the wetted surface area, the more resistance. Resistance slows a boat. You need only enough centerboard to minimize lateral movement, or leeway.

The simple rule to remember is that when you are sailing on a close haul you need the centerboard completely down. As you fall off the wind to a close reach, about 80 percent of the centerboard is necessary, 50 percent for a beam reach point of sail, 20 percent for a broad reach, and the centerboard should be almost completely up when running downwind.

If the centerboard is completely up when running downwind, the sailboat has a tendency to twist around because the sails are out to the side. A touch of centerboard reduces the twisting pressure. Basically, as you head off the wind you need less centerboard. Conversely, as you head up on the wind, more centerboard is necessary to reduce the lateral movement.

An important point to be remembered is that the centerboard must be at least partway down before attempting any maneuver, such as a come-about or jibe. The centerboard allows the boat to pivot when making a turn, thus reducing the leeway. Therefore, before initiating any turn be sure to lower the centerboard.

Centerboard adjustments are skills that should be used by the skipper who has mastered the basics. Beginners who get involved with centerboard adjustments often forget to put the board back down after a nice downwind run, and then they have difficulty performing any necessary maneuvers. They think about the come-about and forget the centerboard. For the experienced skipper, be sure to make those centerboard adjustments. They really count!

Rudder, steering and efficiency

The primary function of the rudder is to facilitate turning the boat to port or to starboard. This turning action is accomplished by drag created when water no longer flows smoothly past both sides of the rudder. The term *drag* obviously indicates an action that reduces hull speed. Therefore, every time the course of your boat is altered by means of the rudder, the speed is momentarily decreased. All boats need a rudder to control their direction, but the skipper holds the tiller, which controls the rudder. This is where the steering efficiency often makes the big difference in how fast you get to the final mark.

The shortest distance between two points is a straight line. I repeat that idea numerous times when I'm teaching a sailing class. Steering efficiency is a learned skill and it takes practice. Understanding how to keep your boat going in a straight line, with minimum rudder action, involves several observations, decisions and actions.

The first observation is the wind direction in relation to the boat's course. Many skippers don't allow for leeway (sideways movement of the boat), and they often have to alter their course numerous times as they approach the final destination. Every time the rudder is used, drag is created and the boat is momentarily slowed.

Experienced skippers allow for leeway and often set a course to the windward side of the final destination point. That way as the boat travels along its course, they compensate for the leeway because the original course was set upwind of the final destination. This same action is used when coastal cruising skippers have to deal with tides and currents.

Understanding how to adjust for leeway is great, but what happens if the wind changes its direction and you still have to get back to the home dock? That is not a big problem if all that has to be done is adjust the trim of your sails. But if the wind happens to be coming from the direction in which you want to go, then you have to tack to windward.

Tacking to windward is a skill that separates the abilities of skippers. You might remember the recent America's Cup series in Australia. The skipper who won the race was almost always the one who won the first leg of the course—the tack to windward.

When sailing to windward it is especially important to note wind changes. The wind could shift in either direction of your given course. Depending on the direction, the wind shift is referred to as either a lift or header. A lift occurs when the wind shift allows you to head up and point your boat in a better line toward your windward destination. The header occurs when the wind shift forces you to head off the wind. If you continue to head off because of the header, it puts you farther away from the final destination unless you decide to change tacks, which might be the appropriate action to take.

Understanding how to make a sailboat move faster is just part of the learning process. The next step is to take the textbook material and apply it to your sailing. Practicing the skills necessary to improve boat speed is critical if your sailboat is to move faster this season. Watching other experienced sailors and practicing are the keys to fast, fun sailing.



Dr. Bob Ricketts is a faculty member in the Department of Exercise and Sport Science at Penn State University. He has taught a variety of sailing courses over the years on Pennsylvania lakes and on the Chesapeake Bay. Dr. Ricketts is active in the American Sailing Association and the United States Coast Guard Auxiliary.



PFD Update

You may not know about the simplification of details on the proper use of the various classes of Personal Flotation Devices (PFDs). Soon, every PFD offered for sale must be accompanied by a booklet that includes the following information:

- **Type I.** Offshore life jackets. Best for open, rough or remote water, where rescue may be slow in coming. *Advantages:* It floats you the best. Designed to turn unconscious wearers face-up in the water. Highly visible color. *Disadvantages:* Bulky. *Sizes:* Two sizes to fit most children and adults.
- **Type II.** Near-shore buoyant vest. *Advantages:* Designed to turn unconscious wearers face-up in water. Less bulky, more comfortable than offshore life jacket (Type I PFD). *Disadvan-*

tages: Not for long hours in rough water. Will not turn some unconscious wearers face-up in water. *Sizes:* Infant, Child-Small, Child-Medium and Adult.

- **Type III.** Flotation aid. Good for calm, inland water, or where there is a good chance of fast rescue. *Advantages:* Generally the most comfortable type for continuous wear. Freedom of movement for water skiing, small-boat sailing, fishing. Available in many styles, including vests and flotation coats. *Disadvantages:* Not for rough water. Wearer may have to tilt head back to avoid face-down position in water. *Sizes:* Many individual sizes from Child-Small through adult.
- **Type IV.** Throwable device. For calm, inland water with heavy boat traffic, where help is always nearby. *Advantages:* Can be thrown to someone. Good backup for wearable PFDs. Some can be used as seat cushions. *Disadvan-*

tages: Not for unconscious persons. Not for nonswimmers and children. Not for many hours in rough water. *Kinds:* Cushions, rings and horseshoe buoys.

- **Type V.** Special-use devices. Good only for special uses or conditions. See label for limits of use. Varieties include boardsailing vests, deck suits, work vests, hybrid PFDs and others. *Advantages:* Made for specific activities.
- **Type V.** Hybrid device. Required to be worn to be counted as a regulation PFD. *Advantages:* Least bulky of all types. High flotation when inflated. Good for continuous wear. *Disadvantages:* May not adequately float some wearers unless partially inflated. Requires active use and care of inflation chamber. *Performance level:* Equal to either Type I, II or III performance as noted on the label.—*Special thanks to the U.S. Coast Guard Auxiliary for providing this information.*

Commission Somerset Headquarters Dedicated

A brisk day drew a crowd of more than 50 for the dedication of the Fish Commission's Southwest Regional Headquarters at Somerset on Sunday, April 24.

In his dedication speech, Representative William R. Lloyd, Jr., 69th District, praised the Fish Commission for providing recreational opportunities and luring tourists to Somerset County. He also pointed out that Pennsylvania is one of the few states with an independent agency financed by fees paid by sportsmen. According to Lloyd, this independence allows the best scientific management of the resource.

"There's a bargaining or negotiating that goes on between the Fish Commission and the sportsmen. The result is a good check and balance."

The Fish Commission has operated a regional office for 30 years in Somerset. The new building, which overlooks Lake Somerset, houses Fish Commission law enforcement, fisheries and property maintenance personnel. The offices are open 8:30 a.m. to 4:30 p.m. Monday through Friday for anyone who would like to visit.

New "River Canoeing" Poster Available

The Fish Commission has available a new 22-inch by 34-inch full-color hand-somely illustrated poster that addresses the basics of river canoeing. Developed by Dr. Robert Kauffman, professor of recreation and a member of the board of directors of the American Canoe Association, and Virgil Chambers, chief of Boating Safety Education for the Pennsylvania Fish Commission, the poster gives the reader the essentials on "River Canoeing." The poster is illustrated by Ted Walke, Commission graphic artist.

The poster is packed with important information every river paddler should know. Topics include self-rescue, equipment recommendations, proper attire (both for cold and warm-weather boating), basics in running a shuttle, and guidelines in planning a float trip.

This educational poster is available for \$3.50 postpaid from the Pennsylvania Fish Commission, P.O. Box 1673, Harrisburg, PA 17105-1673, or the American Canoe Association, 8580 Cinder Bed Road, P.O. Box 1190 (P), Newington, VA 22122-1190.

Movies Available

The Fish Commission has the following 16mm movies available through the Pennsylvania State Library System: *Judgment on the Water. . . . A Lesson in Small Boat Safety, Water: The Timeless Compound and Acid Rain, Requiem or Recovery.* To reserve a film, order it through your local library.

Judgment on the Water addresses the sportsman's use of small boats. It highlights the major causes of small-boat fatalities, which include alcohol use while boating, not wearing PFDs and cold-water boating.

Water: The Timeless Compound addresses water safety awareness. It examines water as it is found in oceans, lakes, rivers, creeks and streams. The story is told through documentary photography, animation and accounts of water accident victims.

Acid Rain, Requiem or Recovery is an environmental awareness film showing the affects of acid rain and the need of implementing action to minimize and eliminate its current and future damage to the environment.



Check Your Spark Plugs

Calling a key participant in an organization or team a "spark plug" is an apt metaphor because a spark plug in an internal combustion engine makes the whole thing go. Because of the importance of plugs, it's a good idea for boaters to know something about their characteristics, according to the boating authorities at Mariner Outboards.

How do you know when they're bad? Fouled, defective or worn-out plugs betray their presence in various ways. If the engine won't start, idles poorly, "misses" or won't run as fast as it used to, the possible cause may be bad spark plugs.

To inspect the plugs, remove the cowl of your outboard, disconnect the leads and unscrew them. Clean them and inspect them visually. If the center electrode is eroded, replace the plug with a new one. Don't use any plugs that you find lying around. Get the one that is recommended by the manufacturer in the owner's guide.

Check the gaskets to be sure they're in good condition. Replace them if necessary.

Reinstall the plugs by screwing them in hand-tight, and then giving them another one-quarter turn with a wrench. Do not overtighten or you may crack an insulator or strip the threads.

Connect the leads to their respective spark plugs. This is simple enough, but it's surprising how often even professional service people carelessly put the leads on the wrong plugs. While you're making sure you are putting the leads in the right place, check them for damage or deterioration. Replace them if they aren't in good shape.



"Whitewater" is Boy Scouts Newest Merit Badge

The challenge of whitewater canoeing and kayaking for youngsters has been recognized by the Boy Scouts of America (BSA) with its newest merit badge.

Called simply "Whitewater," the badge, one of some 120 that may be earned by 11- through 17-year-old Boy Scouts as part of their advancement program, was developed over the past three years. The BSA has offered a canoeing merit badge since 1926, which is geared toward learning traditional lake and flat-water canoeing skills.

A dozen requirements are designed to test a Scout's knowledge and skills of river running, whitewater boating safety, paddle and canoe technology, and related first aid. The final requirement asks a Scout for a comprehensive plan of and leadership in a day-long whitewater trip for beginners.

Before working on the new badge's requirements, a Boy Scout first must have earned the canoeing merit badge, which annually tends to be in BSA's top 10 most popular merit badges.



A study pamphlet in support of the whitewater requirements is being written. Author K. Greg Tucker, of Washington, D.C., is former chairman of BSA's Aquatics Committee and an avid whitewater canoeist and kayaker. Also consulted during development of the badge was Dr. David Kurtz, of Penn State University, holder of numerous national and international canoe racing titles, a former U.S. Olympics coach, and an advisor in BSA's Exploring program.

Dedicated to the sound conservation of our aquatic resources, the protection and management of the state's diversified fisheries, and to the ideals of safe boating and optimum boating opportunities.

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Calendar

July

2 Carlisle Summerfair, Boiling Springs Lake (racing of homemade crafts powered by hand or foot). Carlisle Summerfair, 212 N. Hanover Street, Carlisle, PA 17013.

2, 3 Independence Day Regatta (rowing races), Schuylkill River, Philadelphia (Schuylkill Navy of Philadelphia, 4 Boat-house Row, Philadelphia, PA 19130).

2-3 Dave's Pond N/C (slalom, trick and jumping water ski tournament), Erie, PA (Dave Strong, 9748 Eureka Road, Edinboro, PA 16412).

2, 3, 10, 17, 24, 31 Sailboat races, Susquehanna River at Long Level (Susquehanna Yacht Club, RD 1, Wrightsville, PA 17368). Races through 10/16.

2, 9, 16, 23, 30 Sailboat races, Lake Wallenpaupack (Lake Wallenpaupack Yacht Club, Tafton, PA 18464). Races through 10/10.

3, 10, 17, 24, 31 Sailboat races, Lake Nuangola, Luzerne County (Nuangola Yacht Club, 15 Nuangola Avenue, Mountaintop, PA 18707). Races through 9/4.

3, 10, 24 Sailboat races, Rose Valley Lake, Lycoming County (Lycoming Yacht Club, 926 First Avenue, Williamsport, PA 17701). Races through 10/9.

7, 8, 10, 24, 31 Sailboat races, Presque Isle Bay, Lake Erie (Presque Isle Yacht Club, P.O. Box 1075, Erie, PA 16512). Races through 10/2.

9, 23 Sailboat races, regattas, Lake Arthur (Moraine Sailing Club, P.O. Box 692, Pittsburgh, PA 15230). Races and regattas through 10/1.

9, 10, 16, 17, 23, 24, 30, 31 Sailboat races, Pymatuning Reservoir, Crawford County (Pymatuning Yacht Club, James-town, PA 16134). Races through 9/25.

9, 27, 30 Sailboat races, Lake Nockamixon, Bucks County (Nockamixon Sail Club, 215 Laconton Road, Willow Grove, PA 19090). Races through 10/23.

10, 23 Sailboat races, Marsh Creek Lake, Chester County (Marsh Creek Sailing Club, 1200 Larchmont Avenue, Havertown, PA 19083). Races through 10/16.

15, 16 Water ski show, Allegheny River, Allegheny County (Eureka Hose Company #2, 304 Third Avenue, Tarentum, PA 15084).

15, 22, 29 Sailboat races, Quaker Lake (Quaker Lake Yacht Racing Club, Box 1702, Binghamton, NY). Races through 9/18.

16, 17 Competitive water skiing, Schuylkill River, Berks County (Reading Water Skiers, RD 9, Box 9187, Reading, PA 19605).

16, 17 Mid-Eastern Water Ski Championships, Reading, PA (Keystone State Water Ski Federation, 5 West Indian Lane, Norristown, PA 19403).

16, 17 35th Annual Port Indian Powerboat Regatta (hydroplane and ski-boat races), Schuylkill River near Norristown, PA (Port Indian Civic and Boating Association, 66 West Indian Lane, Norristown, PA 19403. Phone: 215-666-9428.) Sanctioned by the American Power Boat Association.

18 Pennsylvania Fish Commission meeting, Harrisburg area (for more details, contact the Commission at 717-657-4522).

19, 26 Sailboat races, Blue Marsh Lake, Berks County (Blue Marsh Sailing Association, 4375 Wyomissing Avenue, Shillington, PA 19607). Races through 10/9.

21-24 Championship rowing regatta, American Rowing Championships, Schuylkill River, Philadelphia at Fairmount Basin (American Rowing Championships, 1520 Spruce Street, Apt. 1110, Philadelphia, PA 19102).

23 Sailboat races, canoe races, triathlon, Pinchot Lake, York County (American Red Cross, Harrisburg Area Chapter, 1804 N. Sixth Street, Harrisburg, PA 17101).

24 Sailboat races, Leaser Lake, Lehigh County (Windward Sailing Club, 4370 Driftwood Lane, Allentown, PA 18103). Races through 10/15.

28-30 Sailboat races, Lake Glendale (Lake Glendale Sailing Club, P.O. Box 291, Clearfield, PA 16830). Races through 9/18.

29-31 Oakmont Regatta, Oakmont (Oakmont Yacht Club).

31 Sailboat races, Pymatuning Lake, Crawford County (Pymatuning Sailing Club, P.O. Box 263, Andover, OH 44003). Races through 9/25.

August

4, 7 Three Rivers Regatta, Pittsburgh.

6, 7 Parade of decorated boats, Lake Winola, Wyoming County (Lake Winola

Cottagers Association, Box 56, Lake Winola, PA 18625).

13 Canoe race, Francis Slocum State Park Lake, Luzerne County (Keystone State Games, 31 S. Hancock Street, Wilkes-Barre, PA 18702).

13 Canoe, kayak race, Francis Slocum State Park Lake (Keystone State Games, 31 S. Hancock Street, Wilkes-Barre, PA 18702).

13, 27 Sailboat races, Gifford Pinchot State Park Lake (Pinchot Sailing Club, Steven C. Sheffer, 30 Bunker Lane, Eters, PA 17319). Races through 10/8.

19-21 Beaver County River Regatta, Beaver River, Bridgewater, PA.

20 Water ski tournament, Schuylkill River, Montgomery and Chester counties (Blackrock Water Skiers, 359 King Street, Pottstown, PA 19464).

24-26 Sailboat races, Fairview Lake (Pike County). Javelin Fleet 7, Gail Lowden, 816 Morwood Road, Telford, PA 18969.

September

24 Presque Isle Open Water Ski Tournament (Deny Fabrizi, 3110 Holmes Street, Erie, PA 16504).

October

8 Rowing regatta, Schuylkill River, Philadelphia (U.S. Navy Recruiting, Broad and Cherry Streets, Philadelphia, PA 19103).

24 Pennsylvania Fish Commission meeting (Time and place to be announced. For more details, call the Commission at 717-657-4522).

Personal Watercraft Booklet Available

A colorful, information-packed 16-page introduction to personal watercraft is available from the Personal Watercraft Industry Association (PWIA) to help owners and prospective owners get the most fun from their craft. The booklet, called *Fun with Safety on Your Personal Watercraft*, covers riding tips, equipment hints, safety suggestions and boating rules of the road. The booklet is available for \$1 postpaid from: PWIA/NMMA, 401 N. Michigan Avenue, Chicago, IL 60611.

Low-Tech Canoeing Gear

When I was a kid, I was into bikes. At least once a month during the summer, friends and I would load up with food and camping gear and strike out to one of the state parks near my boyhood home in Chicago. Once, when we were feeling particularly adventurous, we pedaled deep into Indiana—a distance of 200 miles. It was great fun, even though we were all keenly aware that our one-speed, balloon-tired bicycles were badly suited to the job. How I yearned for a shiny 10-speed Raleigh—the premiere traveling machine in those days.

Dad sympathized, but wasn't much help. He saw to it that our basic needs were well taken care of. Beyond that, there wasn't much money for toys.

Then one day, while browsing through the library, I discovered a book called *One Thousand Miles On A High Wheeler*. It was about a kid who spent a full summer traveling the back roads of America on a high-wheel bicycle. Talk about primitive! Right then I gained new respect for the stocky old Schwinn, and for the undeniable fact that "skills are more important than things."

Later, I read about Grandma Gatewood, who at the tender age of 67, and after raising 11 children, hiked the full length (2,000 miles!) of the Appalachian Trail in one season. One year later, she did it all again, and then spent the remainder of her years loudly extolling the value of wilderness. Grandma G. had no money for hiking boots or packsacks or Swiss Army knives. She carried her essentials (which never weighed more than 20 pounds) in a denim sack over her shoulder. On her feet were canvas sneakers. They were the only shoes she wore.

And speaking of simplicity: When John Muir climbed the mountains to "get their good tidings," he fitted all his needs into a well-worn woolen overcoat. His only camping tools were a jackknife and an insatiable curiosity.

Inspired by Muir, Gatewood and the kid on the high-wheeler, I decided to experience for myself the freedom of traveling without sophisticated gear. My only concessions to modern ways were my wood-strip solo canoe, custom paddle and ribbed PFD. Everything else came from castoffs that lurked about.

In keeping with Muir's philosophy that "It's hardly necessary to cross the conti-



Low-tech canoeing gear (above) means equipment that works and that is inexpensive. Try industrial-grade raingear with snap fronts, discount store wind shells and military surplus field jackets, wool shirts and pants from garage sales and surplus stores, and acrylic hats, sweaters, shirts and gloves.



by Cliff Jacobson



ment in search of wild beauty...for it's in abundance wherever you chance to be." I selected a small stream just five miles from my home. I had a long weekend coming up: A three-day sojourn seemed just right.

I began by assembling two canoeing outfits—one modern, the other traditional. The former included Gore-tex clothing, polypropylene pile and freeze-dried foods. The latter consisted mostly of garage sale items and things from my scouting days. With the exception of staples like rice, tea and dried soups, I made no concession to expensive freeze-dried foods.

Just for fun, I weighed the two outfits. The high-tech one scaled 48 pounds and cost an estimated \$1,200. The castoffs weighed 14 pounds more and could probably be purchased for under \$200. The challenge was there: Would using traditional gear spoil my trip or add to its pleasure? It would be an interesting experiment.

For three days, I drifted and dreamed, alone in my solo canoe. I saw deer, beaver and muskrat. Once a mink swam boldly by my canoe. About noon one day, a gentle rain began that lasted into the morning of the next day. But throughout it all I remained warm and dry, full of enthusiasm. The old stuff worked as well as the new!

I suffered no discomforts or inconveniences while on the river. Indeed, practicing traditional ways added to the fun because it made me rely more heavily on my own skills. What I learned most was that you don't need expensive equipment to have a good time. The joys of the river are there, no matter what you choose to wear or bring.

Here, then, in a nutshell, are some ways to avoid the money pinch when you shop for canoeing gear.

Rain gear

You can pay several hundred dollars for foul-weather sailing suits that will keep you absolutely dry in the worst rains. Or you can hoof it to your discount store and for five bucks get vinyl gear that destructs in the first mist. In between these extremes is moderately priced polyurethane coat stuff that works as often as not.

The best way to stay dry and beat the money crunch is to visit your local industrial supply store—same place that services construction workers and maintenance personnel. The new industrial-grade rainsuits are tough, reliable and very light. They don't have two-way pockets and other frills that drive up tailoring costs, so they can be purchased cheaply (usually under \$40 for the complete outfit). Friends have used these suits on month-long canoe trips with complete confidence.

Severe outerwear

If, like me, you get on the water as soon as the ice goes out, you need clothing that reflects your enthusiasm. The stock solution is a wet suit, but it's too restrictive for the kind of gentle cruising most people prefer. A more practical approach, and one that manufacturers would have you adopt, is to layer expensive pile garments under sophisticated nylon shells. Figure \$150 for the pile shirt and pants and another \$100 for the shells. Add a pile hat and Gore-tex gloves and you'll break \$300.

There is a less costly and equally comfortable (albeit, not fashionable) solution. It's called *wool*! Makers of the new synthetics give you all sorts of reasons why wool is less effective than their own products. In truth, good old wool still is a marvelous insulator, and it will outlast most of the new synthetics.

Every spring, I make the rounds of second-hand stores and garage sales where I find wonderfully serviceable brand-name wool shirts and military wool pants. Two good wool shirts and one pair of army field pants will suffice for all your cold-weather canoeing needs. Add a pair of military surplus cotton/polyester "chinos" and you're set for the warmth of summer.

The best protection against biting winds is a porous nylon wind shell. Discount store cheapies that sell for about \$15 are fine.



Casual wear, including cotton T-shirts and polyester slacks, rate first choice in summer heat. Blue jeans of any type don't make the grade no matter how warm the weather.

Next stop, your local discount store, in search of 100 percent Orlon acrylics. Acrylics absorb very little water, so they dry quickly. They're also soft and non-allergenic and they possess excellent insulating properties.

When, in 1974, Verlen Kruger and Clint Waddell made their epic canoe voyage from Montreal to the Bering Sea, they chose a complete outfit of Orlon acrylic. Acrylics are inexpensive, but they work!

An acrylic sweater and stocking cap (wool is preferable here unless you're allergic to it) can usually be purchased for under \$20. A pair of foreign-made acrylic gloves (the kind with vinyl dots on the palms) cost about two dollars and provide plenty of warmth plus an iron-tough grip on the paddle. Acrylics are the obvious choice when you're canoeing with growing kids and want to keep costs down. Most of the castoffs you'll find in second-hand stores are woven from this fabric.

Incidentally, a light acrylic sweater, worn right next to the skin, makes wonderfully warm long underwear.

Long johns

The rage today is dacron: Before that it was polypropylene. But the wool longies Granddad wore continue to insulate as well as ever. The best place to look for good buys is your army surplus store. If your taste runs to polyethylene, buy the "made in Taiwan" cheapies. These may lack the finer tailoring of the best American garments, but they work just as well.

That's it for your cold-weather canoeing wardrobe. In summer anything except

blue jeans, which never seem to dry, will do. Several deaths due to hypothermia have been traced to cotton blue jeans, which when wet extract body heat unmercifully.

Wind shell

You need a "breathable" wind garment in addition to your waterproof rain clothes. One jacket won't serve both purposes. Rationale: Every time you wear rain clothes for wind protection, you subject them to abuse. In time, tiny pin holes develop and water wicks through. Wear your rain gear only when it rains and it won't let you down when you need it most.

The best protection against biting winds is a porous nylon windshell. The discount store cheapies that sell for \$15 are plenty adequate. You don't need sophisticated features like billed hoods and storm skirts for canoeing. These features drive up costs and add little utility. More importantly, they add bulk—something you don't want on a canoe trip.

The best canoeing parkas crush to fist-size and stuff into the smallest corner of your day pack. If you must have something more substantial, consider the inexpensive military "field jackets" sold at surplus stores. These two-ply cotton/dacron garments are true mountain parkas. They started the outdoor-designer fad.

Footwear

Here's a place where "low tech" is high tech. For summer cruising, nothing beats old-fashioned canvas sneakers. When the temperature drops, nest sneakers inside calf-high rubber boots. This combination was preferred by Clint Waddell on his trip to the Bering Sea. The sneakers/rubber-boot combo is ideal for children, too. They can wear the rubber overshoes for wading and kick them off for comfort in the canoe.

L.L. Bean leather top/rubber bottom "Maine Hunting Shoes" remain my favorite footwear for all seasons. In summer I wear cool leather insoles; in spring and fall, I substitute sheepskin-lined insoles. Six-inch tops are just right for Pennsylvania rivers.

When the ice goes out in March, neither sneakers nor boots will do. Now's the time to wear neoprene wet-suit socks (about \$10 at any diving shop) inside oversized tennis shoes. You can wade all day in ice water and "feel no pain."

Packs

You don't need sophisticated packsacks for canoeing Pennsylvania rivers. Most

portages are short—generally "lift-overs." For these, any watertight container that's easy to handle will do. Here are some low-cost favorites:

1. *Duffle bags and soft-sided athletic bags.* Line these with paired plastic bags and tie them in the canoe with quick-release knots.

2. *Plastic ice chests.* Great place to store cameras, binoculars and crushable foods. Duct-tape the perimeter and you'll have a tough, watertight "wanigan." Tie the chest to a pack frame if you'll have to portage it very far.

3. Obtain a 15- to 20-inch high rectangular *plastic trash can* and insert it into a packsack. For the ultimate in waterproofing, nest the waste can *inside* a strong plastic bag and seal the bag with a loop of shock cord. This unit provides excellent protection for all your breakables.

4. A *coffee can* with a plastic lid, set inside a drawstring bag, makes a fine safe for crushable valuables.

5. *Waterproof protection for your camera.* The amphibias assault gas-mask bag is constructed of canvas-covered rubber and has three heavy-duty brass fasteners that won't pop loose under strain. It's absolutely watertight and almost indestructible. Cost is around seven dollars at surplus stores.

Let's summarize the complete outfit:

Raingear: Industrial-grade suits with snap fronts.

Wind shells: Discount store cheapies and military surplus field jackets.

Severe outerwear: Wool shirts and pants from surplus stores and garage sales. Acrylic shirts, sweaters, hats and gloves. Acrylics are the best choice for children.

Long johns: Surplus woolens work fine. Name-brand polypropylenes are no more efficient than the foreign cheapies.

Summer canoeing clothes: Casual wear, including cotton T-shirts and polyester slacks rate first choice in summer heat. Blue jeans of any type don't make the grade no matter how warm the weather.

Packs: These can be as simple as a nylon duffle bag or plastic ice chest. You don't need sophisticated packsacks for canoeing Pennsylvania waters unless you're heavy into whitewater. Even here, the low-cost units I've described are probably adequate.

Finally, don't forget to bring what counts the most—a generous measure of your own canoeing skills. Simmer these with a well-chosen stock of low-cost items and you'll enjoy the worst of times on the best of terms. 

Skiing on Your Knees



O'Brien International

Kneeboarding is easy to learn, it requires very little horsepower to tow a kneeboarder, and a kneeboard is versatile.

by Bruce Kistler

It has been said that people don't go water skiing anymore; they go kneeboarding instead. This is an exaggeration, of course, but it expresses a basic truth. The popularity of kneeboarding in the past several years has been phenomenal.

A kneeboard resembles a short, wide surfboard. The rider kneels on a built-in foam pad and uses an adjustable thigh strap to stay on the board. Since the appearance of the original Hydroslide, most major ski manufacturers have introduced their own kneeboards.

There are three major reasons for the kneeboard's popularity. First, it's easy to learn. Most people can ride one the first time they try it. There is no fall-after-fall routine, typical of learning how to get up on water skis. In fact, because of this, kneeboarding is an excellent introduction to water skiing.

Second, because it is so wide, a kneeboard requires very little horsepower to tow and can be enjoyed at slow speeds. Low horsepower rigs that are not suitable for any other kind of water skiing can

often be used for kneeboarding. Falls tend to be softer than water ski falls because of the slower speeds and because you are already at the water level when you dive in.

Third, a kneeboard is versatile. It can be used to cut back and forth, jump wakes, do turns and sideslides; it can even be used to learn how to barefoot. Advanced tricks such as helicopters, mule kicks and flips are also possible.

Deepwater start

Getting up on a kneeboard from the water is done by lying on the board and then kneeling once the board is planing. Remember always to wear a PFD when kneeboarding.

In the water, grasp the sides of the board and slide it under you tail-first. Then prop yourself up on your elbows and grasp the ski handle at the ends with both hands. Move forward until the handle is near the nose of the board. Your legs should trail behind. When you are getting ready, be sure that you stay centered from side to side or the board may pop out from under you.

When the rope is tight and you are ready,



tell the driver to "hit it." To help you maintain control when you are just learning, the boat should take off very slowly. A kneeboard planes so easily that it is not necessary to go fast. Keep the nose of the board up during the takeoff by leaning back somewhat.

As you gain speed and the board planes off, put more weight on the nose of the board by leaning forward so that your chin is even with the ski handle. Use your legs as rudders.

Then, with the boat moving 10 to 15 miles per hour and keeping your elbows on the board, draw your knees up until they are under your chest. Don't bother with the knee strap on your first ride. Kneel right on top of it. When you are riding in good balance, sit up slowly. If the nose of the board begins to porpoise (bounce up and down), your weight is too far back. Go down to your elbows again and pull your knees farther forward. Keep moving forward until the board does not bounce

when you sit up.

On subsequent rides, you will "strap in" as you are getting to your knees. This is a little tricky because you must let go with one hand to hold the knee strap as you slide your legs under it. The other hand must hold the ski handle to keep the board from twisting sideways due to an uneven pull. Be sure that you have adjusted the strap beforehand so that it forms a loose loop. Then, when you are in kneeling position with the strap over your thighs,



are ready, tell the driver to "hit it," then lean back and hold the ski handle at your thighs to brace against the pull. Keep leaning back as the board slides into the water to keep the nose of the board up.

Basic board control

You can quickly learn how to change direction on your kneeboard by leaning against the pull of the towrope. When cutting out to either side, hold the handle in close to your hip for the most efficient angle. When turning back toward the wake, let the handle out slowly until you have shifted your weight, and then pull the handle back in toward your hip again.

This technique of holding the handle in close when cutting and letting it out slowly when turning is basic to all advanced water skiing. Some kneeboards have retractable fins that can be lowered to provide greater control when cutting or making tight turns. The fins can be retracted to give a flat-bottom surface for doing turnabouts and other tricks.

A kneeboard has a very large planing surface, so it doesn't slow down or change direction quickly. Consequently, you must be extra careful that you are not near shore or any solid objects when cutting hard outside the wake. If you see that you are about to collide with something, immediately "bail out"—fall over to one side.

Wake jumping is particularly fun on a kneeboard because the width of the board permits high jumps without cutting hard. You will notice, however, that the front of the board tends to fly up in the air when you come off the wake. This is because you are sitting on your heels and your weight is toward the tail. To counteract this tendency, you must depress the nose of the board while you are in the air to keep it level. The wake jump itself is initiated by your head and upper body, but the board is controlled in the air by your legs. Be sure to keep the nose of the board up when landing. If it digs in you'll have a very hard fall.

Twists and turns

Sideslides and turns are easy to learn on a kneeboard. If your kneeboard is equipped with retractable fins, make sure they are in the up position before attempting turns or you'll find them impossible to do! Again, use a slow boat speed for the best control.

A sideslide is just what the name implies. The board is turned 90 degrees to the boat and slides sideways. Holding the handle with both hands, rotate the board

in either direction until it is sliding sideways. Hold the handle in close to your hip and lean away to keep the leading edge of the board up.

A 180-degree turn from front-to-back requires letting the handle out somewhat and then pulling it in firmly as the board is swiveled around with the legs. Lead the turn with your head. Keep the handle in close to your body during the turn and regrasp with both hands as soon as possible in the back position. Again, lean away slightly to keep the leading edge up. To come forward again, simply let go with one hand and keep the handle in close as the boat pulls you around to the front position.

The 360-degree turn is a continuation of the 180. It is easiest to learn by doing a series of 180 front-to-backs and 180 back-to-fronts in the same direction. Work on grasping the handle precisely behind your back and shortening the hesitation between the two turns. Eventually you will be able to do one continuous turn from front-to-front without stopping. Remember to maintain a lean away from the boat throughout the turn or you may dig in. Always keep the handle in close; this includes when you are coming to the front position.

Why not join the thousands of water skiers who have discovered how much fun it is to ski on your knees? Once you try it you may spend more time kneeboarding than using traditional water skis. Many other maneuvers than the few described here are also possible on a kneeboard. ■

Choosing a Kneeboard

Although there are many kneeboard models to choose from, they share many of the same basic characteristics. All are roughly bullet-shaped. All are generally between 52 and 56 inches long. All are made of some sort of plastic shell filled with foam flotation. All have some sort of built-in knee pad and some kind of adjustable knee strap.

Some boards loaded with options retail for over \$200. However, basic boards can be found discounted for under \$100. Options include retractable fin systems, pads with deep knee slots, nylon-covered pads (toenails are rough on pads that do not have this nylon reinforcement) and extra-wide straps. Most kneeboards have side grooves in the bottom for better control. Some have square-backed tails and some have V-shaped tails.—**BK**

you can adjust it to a comfortable tightness. Most knee straps have a Velcro-type of adjustment. It helps if the boat goes slowly until you get strapped in and settled in position.

Beach start

When you have gained some experience riding your kneeboard, you can also start from a sand or grass beach. Place the board about 5 feet from the waterline. Kneel in proper position and strap in. When you

Caring for Your Water Ski Gear

by John M. Cornish II

It's going to be one of those relaxing weekends that you've planned for weeks. You're going to have the boat to yourself, with no friends or kids from the neighborhood who consume hours of your seemingly short weekend while they learn to ski and are towed up and down the lake.

You leisurely make your way to your boat, thinking of the relaxing, bobbing motion that awaits you. As you roll the cover off your senses are awakened to the odor and feel of the trapped hot and moist air. A spurt of energy arises as you assess and organize the water ski equipment hurriedly left on the floor of the boat last weekend.

Taking time to organize the ski equipment can be just as disturbing to a boat owner as washing a car can be for a car fanatic. Your inspection of your equipment may reveal a multitude of nicks, dents, twists, tears and stains that alter the plans for a relaxing weekend, evoking other emotions and feelings.

Many skiers can identify with this scene and are probably wondering how all the damage occurs and how it can be avoided. The following hints may help you in your quest to save your water skiing equipment.

Skis

Aside from your rig, (boat & motor), your skis are probably the most expensive equipment you have. Many boaters have a combo pair of skis and a quality slalom ski. In the inspection of your skis, especially your slalom, you may find dents or dings in the deck of the shovel area of your ski. You wonder how they occurred. Could it have been an exploring two-year-old with a ball peen hammer that found the ski's surface to be a perfect practice area

It's more likely that these indentations are the result of a skier losing the handle of the tow rope just as he is pulled from the water. When this happens, you hear a "pop" or "snap" as the rope flies toward the boat. You can figure that the handle just struck the ski, leaving its mark.

The only cure for this problem is to have an old ski or skis along with a rubber-tipped handle to use during those early stages of learning to get out of the water. Even the best skiers lose the handle oc-



asionally, but they do not normally damage the skis because of their experience and awareness. Using old skis can also cure the problem of edge banging that beginners commonly do.

The skis are also the most difficult pieces of equipment to store and keep from damage. Most people just lay the skis in the lockers, or jam them behind the seat or under the bow. We accept much of the storage damage as a fact of life with little thought on how to prevent it. The obvious deterrent is to have ski cases for all your skis, but cases can create other problems that will be discussed later. You should make sure that the storage areas are carpeted or lined with some non-abrasive material to cut down on storage damage.

You can protect your skis by using a little caution, taking your time and using a plan. Instead of just shoving the skis in their designated storage area, you can "place" them there. Place the skis bot-

tom-to-bottom lying on their edges. Depending on the type of fins and space available, you can place them with the fins together or on opposite ends. In both of these positions the fins will not rub and scratch the deck or riding surface areas of your skis. If you happen to keep two slalom skis in your boat, you can store them with the deck surfaces facing each other, again lying on their edges, tails to shovels, with the bindings offset or staggered and serving as bumpers between the two skis. These ideas are simple but effective, taking only a little time and effort.

Air circulation

Cases are a foolproof method of protecting your skis from damage while stowed. A word of caution when using a case—don't put skis in the case, zip them up, and stow them wet. Mildew is always a problem, but wet skis in a closed case is a sure way of becoming a mildew ag-

riculturist. Leave the cases open to allow the circulation of air that may prevent mildew.

Air circulation throughout the boat is very important to prevent the growth of mildew in it and on all your equipment. Many skiers use ski gloves and store them by stuffing them into the toes of their ski bindings while they are still wet. This is great for transporting the gloves safely but not a good way to store them. The gloves and bindings need to have a free flow of air to be allowed to dry and prolong their life.

Vests

Ski vests are another fertile area for mildew to grow. Its ironic that the elements, the water and the sun, that your summer recreation depends on are your boat and ski equipment's worst enemies. Keeping your equipment dry to avoid mildew usually means you expose your wet equipment to the bright sun. The sun is another key to your boating enjoyment. Medical experts have warned us that the sun's rays are harmful to our bodies. The sun is just as damaging to your boating equipment if you lay it out to dry or expose it to the direct rays of the sun. If your skis are exposed to the sun for extended periods the deck surfaces will fade and the binding materials will deteriorate. Life vests, or PFDs, will fade and the materials may dry out, crack or tear, which voids the required Coast Guard approval.

Storage of your equipment is very important. Your PFDs, if folded up and jammed under a seat or in the bow, remain damp, leading to mildew and rotting. If left for a prolonged period, they have a tendency to dry and become welded to themselves, resulting in peeling of their covering. A little time and care in the storage of damp equipment allows it to last much longer. Moderation is the key to both the amount of moisture or sunlight that your equipment should be exposed to.

Ropes

Ski ropes are made of poly compounds such as polyethylene and polypropylene. The sun can damage even these tough synthetic materials, causing early deterioration.

Many skiers have a habit of winding ropes around their arms to package the line for storage. Actually, winding ropes around the arm puts a twist in the rope, sending the numerous loops into a figure eight. These twists and eventual knots place a continuous strain on the strands, weak-

ening them and possibly resulting in fraying. Better quality ropes obviously last longer and are easier to handle if treated properly. These ropes can actually be trained.

It's an interesting concept, "Come see my trained rope." The best way to explain the training of ropes is to refer to the pros of Cypress Gardens and Sea World. It's fascinating to watch as many as nine skiers, all with their own ropes, leave the dock with a moving start. The skiers hold a neat loop of rope in their hands, it feeds out and off they go, at least four times daily, 365 days a year with very few tangles.

Most of us can't do it once a day for a single skier. The most amazing thing is when the rope handler hands a single connecting harness rope to a rope handler on the dock, a few skiers begin frantically reeling ropes in, and in less than five minutes every rope is in nice neat loops and stored. These ropes are trained. So are the skiers who pull them in, creating a team that is efficient with very few tangles and long-lasting equipment.

Tournament water skiers always try to keep their ropes free of tangles and twists. Both groups pull ropes in by making neat, consistent-sized loops. As they pull the rope into the grasping hand, they use the index finger and thumb to roll the rope one revolution. This roll keeps the rope from forming a figure eight. As you pull the end of the rope, you allow the twists to spin out of the rope, leaving it straight and easy to hang or wrap for storage. If this is done consistently the rope soon becomes "trained" and will react as you would expect it to do.

Many avid skiers have a place in their boats to reel the rope in without wrapping or taking any special care. Again, the twists and knots are not present. When the skier is ready to go, he grabs the handle that rests on the top of the pile and the rope feeds out tangle-free. Just a little extra time and preparation pays off.

Ski reels are a convenient way to retrieve and store ropes without tangles. You may notice that many times there are twists in the rope as it is wound on the reel and the beginning sections of rope become creased in the small, quick wraps. The reel is neat but sometimes too cumbersome. The decision to use a reel becomes the individual's as a result of the amount of time and training put forth.

An important part of your ski equipment that is overlooked many times is the ski handle. Many recreational water skiers recognize the handle as just part of the

rope when it can be a separate item and possibly the most important. As in the different quality of ropes, handles are also available in different quality. The average handle is wooden or aluminum-core wrapped with a type of foam or neoprene rubber. Better handles are made of molded rubber on aluminum cores. Handles can be destroyed by the unaware boater just by misuse. How many times have you seen a boater racing down the waterway dragging an empty ski rope? This boater does not realize that the force of the water at 30mph or faster peels the covering right off the handle.

Remember the handle that is released and snaps the front of the ski, leaving dents and other marks? The handle can also be damaged when this happens. The rubber or foam could be sliced or punctured. Dragging a handle that has been damaged allows the covering to be stripped away much more easily. Besides the damage to your equipment, dragging an empty ski line is unsafe. This act could result in a WCO stopping a boater for the purpose of issuing a warning or fine.

Taking care of your water skiing equipment in most cases is based on using common sense. Whether it is in use or in storage, a little bit of extra time and thought can be the answer to keeping your equipment in good condition and long-lasting. You may also get to spend the weekend on your boat relaxing instead of working.



John M. Cornish II serves on Boat Pennsylvania's Editorial Advisory Committee. Last August he earned first place in jumping and wake slalom in the senior men's division at the 1987 Barefoot Nationals, held in Owego, New York. He placed third in tricks and second overall.

AWSA Booklets

The American Water Ski Association (AWSA) has available a series of eight booklets that detail information on "Getting Started," "Fun for Kids," "One for Fun," "Skiing the Slalom Course," "Trick Skiing Fundamentals," "The Next Trick," "So You Want to Be a Jumper," and "Going the Distance." They are available from AWSA for \$1 each. For complete details, contact the American Water Ski Association at P.O. Box 191, Winter Haven, FL 33882.

Trailer to Adventure



by Bill and Bert Schill

Trailer can lead to exciting adventures. Whether berthed on the Delaware River, at Pittsburgh's Golden Triangle or on the shores of Lake Erie, the whole American continent waits to be explored and you have only to pick a direction, set a date, budget enough time, and be on your way.

We have explored most of the United States, Mexico, the West Coast, Canada, coast to coast, logging over 350,000 miles, and never once in all those miles did we have any concern about whether we would "make it." We did everything from climbing 12,000-foot mountains to sloshing through 5½ inches of snow in an unexpected snow storm in the Lake Louise, Banff, Canada, area.

For anyone who has never trailered a boat, it is not difficult and takes no special skill at handling a vehicle with a trailer. The most important maneuver is to learn how to back up, and that is accomplished by keeping your hand at the *bottom* of the steering wheel. You then know that whichever direction you want the rear of the trailer to go is the way you should swing your hand on the wheel. For example, to make the trailer go to the right, swing your hand on the steering wheel to the right.

Our tow vehicles over the years have been station wagons, motorhomes and vans. Our favorite boat, an 18-foot cathedral-hulled Thunderbird, with the convenience of an on-board head and powered by a 115hp motor, has been used as a photographic platform, a water-borne camper

and, of course, a fishing machine.

We favor a weight-distributing hitch and a tilt-bed trailer with the largest dual wheels it is possible to obtain. We have found that the little donut wheels (8-inchers) on many trailers do not provide the necessary safety. When the tow vehicle wheels are revolving at 55 miles an hour, the small trailer tires turn at speeds equivalent to 85mph or more. This can result in ripping the casings to shreds.

We built a portable metal framework for the hull, covered it with canvas, inserted zippered flaps for privacy, as well as easy entrance and exit, and spent many memorable hours camping in out-of-the-way gunkholes. Preparation of meals was made easy by having a portable gas stove and cooler on board.

Rather than leaving our boat at one spe-

cific marina and traveling back and forth weekend after weekend to that same spot, by keeping our boat on a trailer in our side yard, we could visit different areas of the state. We also knew that the boat would be safe in the yard. If a sudden storm blew up, the boat wouldn't be banging against a dock or hung up on a piling, miles away from our home.

Servicing the trailer, such as keeping the bearing protectors well-greased, the brakes in good operating condition and the hull cleaned and waxed, was a definite advantage not only for good maintenance but because the boat always had a bright, sparkling appearance. Also, it was right at hand whenever we had the urge to trail off for fun and adventure. Instead of dockage fees, this money was used for traveling.

The phrase "getting there is half the fun" is very true, so if you think you must drive hard to get to a destination, to the point where your fingers have to be pried loose from the steering wheel, then it would be better for all hands to leave the rig in the yard.

On the majority of our trips we plan an average of 350 miles a day and schedule our arrival before dark at some point where there is a KOA campground (Kampgrounds of America, Inc.). There are 18 KOAs throughout Pennsylvania and they are geared to any form of camping. They have areas set aside to accommodate any type of rig, whether it is a large bus-type motorhome, a pick-up truck camper, station wagon trailing a boat or a tent.

A modern trend that is becoming very popular is to stay in KOA Camping Kitchens. A family trailering a boat with a car has the advantage of staying in a cabin

and economizing by saving the cost of motels and restaurants. More and more families are using this method of camping. All the necessary supplies for cooking and sleeping can be carried in the tow vehicle, or boat, for either overnight stops or longer periods of time. Camping in the boat in a campground is also another possibility.

For a directory of KOA campgrounds, send \$3 to Kent Zimmerman, Kampgrounds of America, Inc., Executive Offices, Billings, MT 59114.

Another excellent directory is the Trailer Life Campground Directory. To obtain information on receiving this directory, write to Ann Forman, Directory Manager, TL Enterprises, Inc., 29901 Agoura Road, Agoura, CA 91301.

One of our most exciting trips was a winter vacation in the Florida Keys.

While there was great beauty all around us, we were aware of some of the dangers of boating in strange waters. We kept extra pairs of boating shoes on board; we make it a practice never to jump into unknown water to moor our boat or explore an unknown beach without wearing shoes. This became even more important where there was coral involved. This was Florida, but the idea is equally useful in Pennsylvania.

We found the water deceptively clear. We would be running along spellbound by the scenery, coral formations and schools of fish, and had we not had our dual-mode depthfinder on board, we would have returned home with a deckle-edged propeller.

Photography is a big part of our life and the parade of insects, birds, flowers, butterflies, seascapes and boats goes on and on.

No doubt, a winter trip to Florida re-

juvenates the spirits and breaks up the long, cold months when boating activities are at a standstill, but other trailering trips we have enjoyed over the years have been to the Outer Banks at Hatteras. Bar Harbor, Maine, with Mt. Cadillac, the first spot in the United States the sun touches when it rises; locking through the Soo Locks along the gigantic ore boats as companions, at Sault Ste. Marie on the St. Mary's River connecting lakes Superior and Huron; fishing in the Intercoastal Waterway at Ocean City, New Jersey, and visiting Philadelphia's historic city and Penn's Landing all have their own special drawing powers.

Cruising on a splendid lake, part of which is on the Flathead Indian Reservation, Flathead Lake, in Montana, was as the younger generation says, "awesome." Formed by glaciers long ago, this lake was the dazzling, snowcapped Mission Range of the Rocky Mountains as a backdrop, and the Mackinaws, or lake trout, we caught were out of this world.

Mazatlan, Mexico, offered some of the best billfishing around with a bonus of warm sun, impressive scenery and friendly people.

Trips to Seattle, Washington, and Vancouver, British Columbia, gave us a chance to sample western boating waters. We especially enjoyed mooring by a pier where Dungeness crabs were steamed in huge kettles, climbing up a ladder to purchase some and having passersby watch while we feasted aboard.

One fascinating trip we made was around the island of Manhattan.

Many exhilarating hours have been spent fishing the rivers around Little Rock, Arkansas; in Yellowstone Lake in Yellowstone National Park; and exploring the Mississippi River around Memphis, Tennessee. However, one of our most thrilling adventures was the eight-hour trip across the Gulf of St. Lawrence, on Canadian National's ocean-going ferry *Caribou*, and exploring the impressive island of Newfoundland.

We found the friendly people, fabulous fishing and gorgeous scenery of snow-covered mountains and quaint outports (fishing villages) only whetted our appetites for a return visit to this fascinating land.

To benefit the most from having a boat and trailer is, of course, to use it to explore Pennsylvania, but there is nothing like visiting the unknown, faraway place when the desire for trailering to adventure arises. 



