

Fall 1994
\$1.50

BOAT

Pennsylvania

The Keystone State's Official Boating Magazine



Viewpoint

The New PFD Rules



John Simmons
Director
Bureau of Boating
Pennsylvania Fish & Boat Commission

In the previous issue, you read an article by Magazines and Publications Section Chief Art Michaels explaining some recent changes in personal flotation device regulations. He also gave 10 important tips to follow in choosing the right PFD. I hope you enjoyed his article and put his suggestions to good work.

Choosing the right PFD is very important. It could be the most important piece of equipment that you ever buy for your boat. PFDs used to be called "life jackets" and "lifesaving devices." And for good reason. A good PFD worn at the right time has saved many lives. We know how many have died in boating accidents, but we do not know how many lives may have been saved as a result of proper use of PFDs. From stories I've heard, the number could be quite large.

Art told you about a recent change in the federal regulation concerning the use of the traditional Type IV PFD. After May 1, 1995, this type of PFD will no longer be acceptable as a primary lifesaving device. After that date, all boats will have to carry wearable devices.

This classification of PFD is known to most of us as the seat cushion. Over the years since its approval it has served small-boat owners well. It has kept our bottoms warm, dry and comfortable. It has been ready for use when needed and has most likely saved a few lives in its time. But there are drawbacks to the cushion. First, it is not always available in an unexpected fall from the boat. The cushion stays in the boat while the operator floats down the lake. The device often does not provide a sufficient amount of flotation for larger individuals. Some people, especially in cold water, could not hold on to the devices long enough for help to arrive. After several seasons of use, it is often squashed, torn and not functional, leading to unwanted citations for unserviceable PFDs. What is most important, they could not be worn even when the boater knew the conditions were bad enough that a wearable device would have made sense and would have made him feel much more safe and secure.

It was only after much debate over the merits of a readily available throwable device versus the benefits of having all boats equipped with wearable devices that the Coast Guard adopted these new regulations. In Pennsylvania, most boating deaths occur in boats less than 16 feet in length.

Even though there is no absolute way to know, we think that many of these tragic deaths could have been averted had the operator had the choice of putting on a Type III wearable device. The new regulation should result in fewer of these types of deaths.

There are other reasons for our support of the new regulations. In recent years, we have been faced with increasing calls for stricter regulations concerning the wearing of PFDs. The Corps of Engineers in the Pittsburgh District issued a decree that all persons on board boats less than 16 feet wear a PFD at all times. We believe that this is unduly restrictive. There are times during the hot summer months when wearing a PFD would be unbearable. We agree that all boaters should wear a PFD when the weather and water conditions warrant such use. We also believe that there are circumstances in which a requirement to wear a PFD is not necessary or at least should not be mandated by government. The new requirement that boats carry a wearable device for each person on board should encourage boaters to wear a PFD when needed and thus lessen the call for more restrictive requirements. Common sense should apply and if given the option to wear or not to wear, we believe that boaters will choose to wear.

The Coast Guard is also moving ahead with a rulemaking project that will, for the first time, approve the use of fully inflatable PFDs. These PFDs will be very low-profile. The types I have seen so far are made in the form of suspenders and pouches worn on the waist. Both types, when inflated, look and work like a Type II horseshollar. They are very effective but are not at all uncomfortable when stowed. Other devices in development look like windbreakers and thus serve two purposes. The Coast Guard hopes to have final rulemaking completed by year's end. The first approved devices should be on the market in early 1995. Look for more information on inflatable PFDs in future issues of *Boat PA*.

Pennsylvania Fish & Boat Commission

Paul J. Mahon
President
Clarks Green
Howard E. Pflugfelder
Vice President
New Cumberland
Samuel M. Concilla
North East
Ross J. Huhn
Saltsburg
Donald N. Lacy
Reading
Leon Reed
Honesdale
William J. Sabatose
Brockport
J. Wayne Yorks
Benton

Boating Advisory Board

Donald J. Little
Chairman
Philadelphia
Clayton Buchanan
Pittsburgh
Gary Miles
North East
Thaddeus Piotrowski
Bloomsburg
Vincent Riggi
Clarks Summit

Magazine Staff

Editor—Art Michaels
Editorial Assistant—Charlene Seifert
•
Art Director—Ted Walke
•
Circulation—Eleanor Mutch
Circulation—Patti Copp
•
Staff Assistant—Rose Ann Bartal
Staff Assistant—Nita Lynch

Boat Pennsylvania (ISSN0888-1561) is published quarterly by the Pennsylvania Fish & Boat Commission, 3532 Walnut Street, Harrisburg, PA 17109. ©1994. Nothing in this magazine may be reprinted without the written permission of the Pennsylvania Fish & Boat Commission. Subscription rates: one year, \$6; single copies are \$1.50 each. Second class postage is paid at Harrisburg, PA. **POSTMASTER:** Send address changes to: *Boat PA* Circulation, Pennsylvania Fish & Boat Commission, P.O. Box 67000, Harrisburg, PA 17106-7000. For subscription and change of address, use above address. Please allow three months for processing new subscriptions, renewals and changes of address. Send all other correspondence to: The Editor, *Boat Pennsylvania*, P.O. Box 67000, Harrisburg, PA 17106-7000. Editorial queries and contributions are welcome, but must be accompanied by self-addressed, stamped envelopes. Material accepted for publication is subject to Pennsylvania Fish & Boat Commission standards and requirements for editing and revising. Submissions are handled carefully, but the publisher assumes no responsibility for the return or safety of submissions in his possession or in transit. The authors' views, ideas and advice expressed in this magazine do not necessarily reflect the opinion or official position of the Pennsylvania Fish & Boat Commission or its staff. The Pennsylvania Fish & Boat Commission receives federal aid in sport fish restoration. Under appropriate federal acts, the U. S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, age, sex or handicap. If you believe that you have been discriminated against in any program, activity, or facility as described above, or if you desire more information, please write to: The Office of Equal Opportunity, Department of the Interior, Washington, DC 20240.

BOAT Pennsylvania

Highlands Hideaways *by Mike Bleech*

These waterways, in the Allegheny Highlands of northcentral Pennsylvania, are where to go to get away from the boating crowds.....4

How to Avoid Common Paddling Hazards *by Cliff Jacobson*

Let this information help you solve some of paddling's most nagging difficulties.....8

Stealth Towboat Proves Deadly to Boater

by J. Warren Taylor and W. David Eley

Boaters need to take special precautions on Pennsylvania rivers that have commercial traffic.....11

Corrosion is Eating Your Boat *by Gary Diamond*

Corrosion is the enemy of all metals, especially those carrying electric current to parts of your boat.....12

The Ducker: Timeworn Pennsylvania Boat *by T.B.T. Baldwin*

The Delaware River Ducker is one of Pennsylvania's earliest sport boats. It's a 15-foot-long gunning craft that later evolved into a fleet of racing sailboats.....14

Boating on the Three Rivers Pool *by Jeff Knapp*

The Three Rivers Pool flows through Pennsylvania's second most-populated area. Let this information help you enjoy your cruise.....16

River-Reading 101 *by Cheryl Hornung*

A large part of boating knowledge includes river reading. This is know-how all boaters need.....22

Smart Piloting *by Jonathan Angharad*

Heed these lessons of a boater who learned the hard way.....24

Buying a Used Small Boat:

Cull the Junk from the Gems by Art Michaels

Watch out. When it comes to buying a used rig, beauty can be only skin-deep.....28

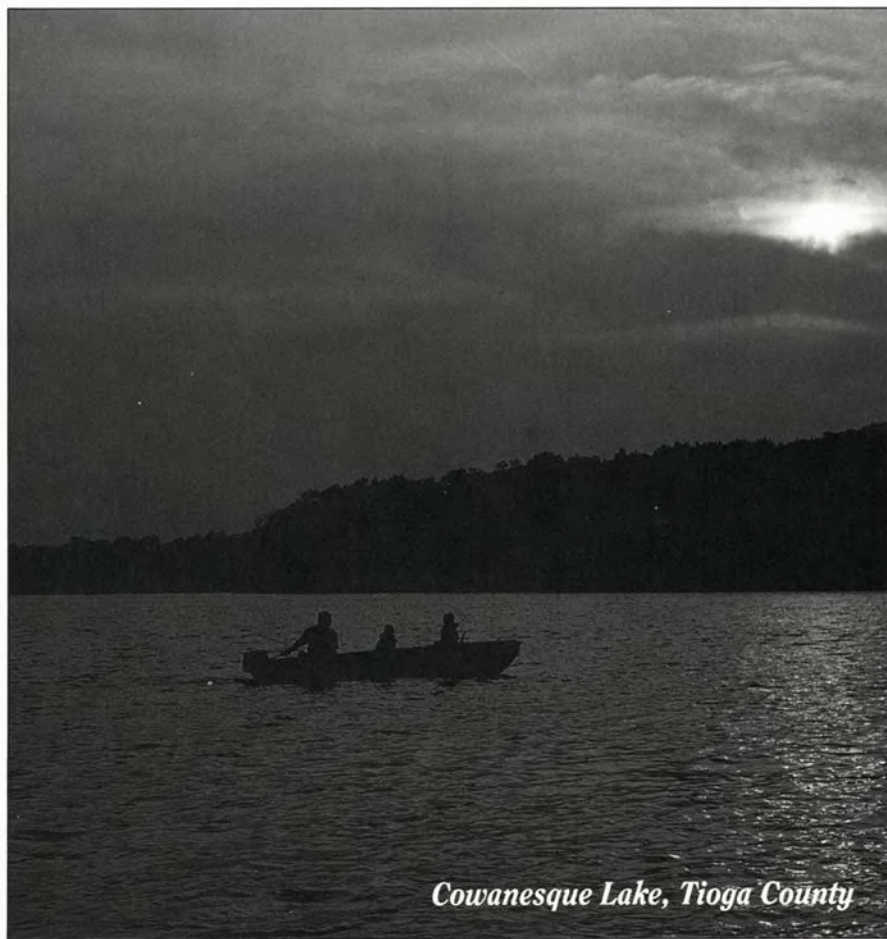
The cover

This issue's front and back covers were photographed on the Youghiogheny River, southwest Pennsylvania, by Kevin O'Brien. You might routinely store your boat for the winter each autumn. Fact is, fall is a great time to be on the water because most other boaters have called it a season. Now you can find plenty of trailer parking at once-crowded accesses. Now you can cruise, play or fish in waters that were crammed with boaters. Check out Mike Bleech's boating suggestions for the Allegheny Highlands of northcentral PA, and Jeff Knapp's overview of the Three Rivers Pool at Pittsburgh. While you're at it, read the operating suggestions for powerboaters in Cheryl Hornung's article on page 22, and in Jonathan Angharad's article on page 24. Paddlers will surely gain a lot from Cliff Jacobson's explanation on how to overcome common paddling hazards, on page 8. And for a walk into the pages of Pennsylvania's boating past, see page 14.



Highlands Hideaways

by Mike Bleech



Cowanesque Lake, Tioga County

None of these lakes is lined with cabins. There are no water slides or amusement parks. Late in the evening when the air is still and quiet, instead of the roar of traffic, you are more apt to hear the hoot of an owl or howl of a coyote.

If getting away from it all is your idea of a vacation, then several lakes in the highlands of our northcentral counties might be the hideaways you want. Powerboating, paddling and sailing—you can do it in relative peace here in the highest, least populated, most forested area of Pennsylvania.

None of these lakes is lined with cabins. There are no water slides or amusement parks. Late in the evening when the air is still and quiet, instead of the roar of traffic, you are more apt to hear the hoot of an owl or howl of a coyote.

Paradoxically, while you relax here in a natural setting, all of these lakes are artificial. There are no natural lakes in the Allegheny Highlands, only a few small ponds. The land was shaped by water flowing out of this area of high rainfall and snowfall. Water seems to be in a hurry to leave. Most of the manmade lakes were designed first for flood prevention, but with recreational considerations.

An attractive feature of a boating vacation in the Allegheny Highlands is the amount of public land. If you examine an official highway map of the state on which public lands are color-coded, you see immediately that most of the land in the region around these lakes is either national forest, state forest, or state game lands.

Narrow valleys, some several hundred feet deep, are the products of the rushing creeks. Most of the land is hillside, forested. Visit one of the scenic vistas and see unbroken forest that rivals the beauty of any part of the world.

In addition to boating you can hike, picnic, camp or watch wildlife. Nowhere else in the state are there so many outdoor recreational activities.

Tionesta Lake

Serpentine Tionesta Lake, 6 1/2 miles long but barely a quarter-mile wide at its widest point, is located near the western edge of the Allegheny Highlands. It was built by the U.S. Army Corps of Engineers in 1940 to contain the flood waters of Tionesta Creek, which drains the Allegheny National Forest.

The 480-acre lake and land around it are managed by the Corps of Engineers. Facilities include a new boat ramp near the dam and a variety of campsites ranging from primitive boat-access-only to well-dressed sites with hot showers. This is one of few lakes where there are primitive campsites scattered along the shoreline.

Programs about nature, conservation, water safety and other outdoor-related

As getaways go, Tionesta Lake is about as
"away" as you can get in Pennsylvania.



subjects are held most summer weekends, usually both Saturday and Sunday, at the picnic pavilion in the outflow camping area. Sometimes the program involves a nature walk.

Tionesta Lake is surrounded by forest. Beyond the narrow strip of Corps of Engineers land is the vast Allegheny National Forest. As you cruise the lake you see only forest, except at the dam and adjacent access, and the Nebraska Bridge at the upper end.

As getaways go, this is about as "away" as you can get in this state. Forest County has no four-lane highways, no traffic lights. There are more hunting camps than permanent homes, a reflection of the fact that there are many more white-tailed deer than people. The nearby community of Tionesta is geared to deal with visitors, though in a quiet, friendly way rather than being a typical tourist town.

Floating Tionesta Creek is another boating option while visiting Tionesta Lake. Depending on stream flow, the creek is suitable for canoes, kayaks and inflatable boats. Except during the lowest flows, there is enough water to float the lower stretch from Kellettville to the lake. Depending on how much you want to paddle or how much you want to float with the current, this trip takes anywhere from a few hours to the better part of a day.

East Branch Reservoir

"You said this place is busy on weekends."

"Well, some guy I met here last year said that on weekends the lake is loaded with people who go back and forth, from one end to the other, as fast as they can go."

Jeri, my wife, was crouched beside our portable barbecue, pulling a couple of chicken breasts that had been marinating all morning out of a plastic bag. Yes, a real barbecue that cooks with indirect heat. It is a little red job that she picked up for \$5 at a yard sale. It is stamped "made in Texas" by someone who knew a little bit about cooking outdoors. Built like a small tank laying on its side, it is split and hinged, with a grill running the full 18-inch length. We build a small fire at one end, and place the food on aluminum foil at the other end, where an exhaust stack draws the hot smoke around the food.

She was not complaining about the lack of boat traffic. She was just kidding me because I had predicted that the launch ramp would be jammed with boaters making their first launch of the season. That usually means trouble. Most things that go wrong with outboard motors go wrong during winter while they are not used. Or there are enthusiastic first-time boaters who do not know what they are

doing, trying to figure out their problems in the middle of the launch ramp.

She dropped a few hickory chips onto the charcoal just before shutting the lid. I lay back on a flat boulder, using a flotation cushion as a pillow, and closed my eyes, enjoying the spring sunlight. Every now and then I peeked at the barbecue. Smoke billowed out of the stack. I knew the chicken would be excellent.

This was Jeri's first visit to East Branch Lake, a hastily planned jaunt to take advantage of an unusually pleasant April Sunday. We shared the lake with a few anglers and a pair of migrating loons. Indeed, it would get quite a bit busier on weekends during July and August, but busy is a relative term.

East Branch Lake, a 1,370-acre impoundment of the East Branch of the Clarion River, is located in the sparsely settled northeast corner of Elk County. An earth-filled dam 1,725 feet long by 184 feet high, built in 1952 by the Corps of Engineers, backs the lake about six miles up the steep valley.

Three large bays provide places to get away from the mainstream of boat traffic on the busier days.

Boat launches are located at both ends of the lake. One near the dam is operated by the Corps of Engineers. The other is part of Elk State Park. The park surrounds

Highlands Hideaways

all but the lower tip of the reservoir. Campgrounds are located near both accesses.

Cowanesque Lake

Cowanesque is one of the more civilized lakes in the Highlands. Managed by the Corps of Engineers, facilities include a campground and day use areas. Though not highly developed, much of the shoreline is manicured. Roads circle within a few hundred yards, or less, of the water. The surrounding land is pastoral. Hills surrounding the lake are relatively gentle.

If you have visited this lake before but have not been here for a few years, you will see a dramatic change. The lake has more than doubled in size. The previous size was 410 surface acres. Now it covers 1,090 acres.

Posted no-wake zones cover the upper end and a couple of narrow bays on the south side.

Cowanesque Lake is on the northeast edge of the Allegheny Highlands, in Tioga County, very close to the New York border. If you circle the lake by road you travel through New York for a short distance.

Boat launch ramps are at a day use area on the south shore and at the campground on the north shore.

Tioga and Hammond lakes

Tioga and Hammond dams were completed in 1979 by the Corps of Engineers for flood control on the North Branch of the Susquehanna River. Hammond Dam backs up the waters of Crooked Creek. Tioga Dam impounds the Tioga River.

These two reservoirs are connected by a channel near the dams. Boats cannot pass through the channel. This unusual arrangement allows diversion of Tioga River flood water into the Crooked Creek valley. You can enjoy the panoramic view at Connecting Channel Overlook, where you can see both lakes from a high, rocky vantage point.

Tioga Dam is a half-mile long and 140 feet high. The reservoir covers 470 acres at normal summer pool. The only boat access is at Lambs Creek Recreation Area, at the extreme upper end of the reservoir. Several picnic sites with grills make this a pleasant place to have a quiet shore lunch.

Looking into the clear water of Tioga Lake the first thought is that the water looks so clean. But the reason the water is so clear is acid mine drainage. This makes the water too acidic to sustain life. The plankton that gives most lakes color are missing.

Hammond, the larger dam, is 1 1/4 miles long and 122 feet high. The lake covers 680 acres at normal summer pool.

More recreational facilities are situated around Hammond Lake, including 29 hike-in or boat-in campsites.

Ives Run Recreation Area is the most complete recreation complex at any of these Highlands hideaway lakes. Those hot showers take the "rough" off roughing it at the 131-site family campground. Some of the camping sites have electric hook-ups and water. The complex includes a swimming area, ballfields, hiking trails, interpretive trails, an archery trail and a playground. Outdoor-related programs are held most Saturdays in an amphitheater.

Two boat launch ramps are just inside the park entrance. Another is in the campground, with adjacent overnight mooring.

Paddling Ponds

A dozen people sat along the shore of George B. Stevenson Reservoir by the boat launch parking lot. We were surprised to see them there so early in the morning. Each held binoculars. "Eagle watching," one of them explained while we lifted the canoe from the top of my van.

The lake was very quiet. The only sounds were our paddles in the water and birds on the steep hillside. The only other boat on the lake was an electric motor-powered 12-foot fishing boat. It was anchored just a few hundred yards from the launch ramp.

We slipped along close to shore without talking. At the mouth of Little Bailey Run I looked back over my shoulder, up the valley, and saw a mature bald eagle flying down the lake. It was only 50 feet over the water and heading directly toward us. I expected it to veer away at any moment, but it did not. It kept coming. When it was over our heads, it circled, looking down at us.

A white feather fell from the majestic bird. It fell slowly in the calm air, coming to rest on the water close to the canoe.

The eagle completed its circle and flew back from where it had come.

George B. Stevenson Dam is located in the steep, narrow valley of the First Fork of the Sinnemahoning. At one time it was called the "First Fork Dam." Only non-powered or electric-powered boats are allowed on the 142-acre lake, making it a pleasant place for flatwater paddling. The scenery is incredible.

In addition to the possibility of seeing a bald eagle, George B. Stevenson Reservoir is one of the very few places in the state where you might observe golden eagles.

A few other small lakes in the highlands offer similar opportunities for flatwater paddling in beautiful, quiet, natural surroundings.

- Kettle Creek Lake (Alvin R. Bush Dam) is in northwestern Clinton County. This 160-acre lake is part of Kettle Creek State Park, which offers camping and a swimming beach.

- Hills Creek Lake, a 137-acre reservoir, is part of Hills Creek State Park. It also has camping and a swimming beach.

- Rose Valley Lake, in central Lycoming County, covers 389 acres.

Pennsylvanians are not accustomed to looking toward our northcentral highlands for powerboating or flatwater canoeing. This part of the state is better known for canoe, kayak or inflatable craft floats down wild creeks filled with spring run-off. Now you know more.—MB.



Hammond Lake, Tioga County



Cowanesque Lake, Tioga County

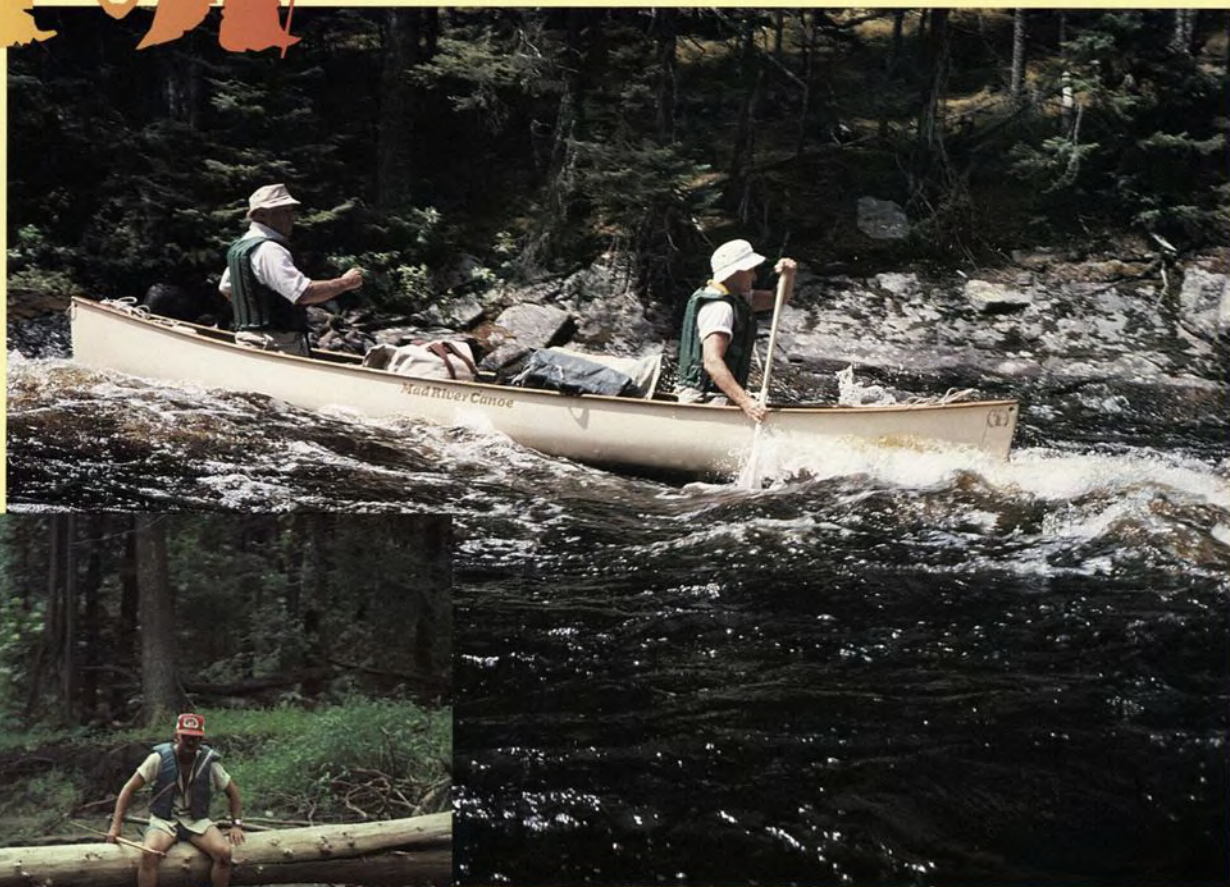


East Branch Reservoir, Elk County

How to Avoid

COMMON PADDLING HAZARDS

by Cliff Jacobson



Everyone has heard grim tales about paddlers who drowned when they capsized in ice-cold water or in a powerful rapid, paddled over a dam, or were struck by lightning.

People who don't canoe react with horror to these stories and solemnly agree that canoeing must be a very dangerous pastime. Experienced canoeists know better. In fact, most knowledgeable paddlers canoe their whole life without ever being involved in a life-threatening incident. Certainly, occasional upsets are par for the course, but death-defying encounters with power dams, waterfalls, strainers (downed trees and bushes that block a river) and ice-cold water are not.

Competent paddlers respect the power of running water and have a proven battle plan to escape its dangers. They also have the skills to execute their plan.

Herein lies the secret of safe canoeing: Learn to paddle well enough so you can carry out your battle plan.

What follows are some of the most common paddling hazards. We'll begin with not-so-serious (sometimes humorous) situations that are easy to avoid and end with scary predicaments that I hope you'll never encounter.

Losing your car keys and money in a theft or capsize

Scenario: You park your car in a dimly lit area at the trail head and paddle off for a weekend of fun. Fearful you'll lose your money and keys in a capsize, you lock these items in the glove compartment of your car. The next day you return to find your car has been broken into. Your money and keys are gone.

This scenario is repeated so frequently that it merits inclusion as a "common paddling hazard." The rule here is simple: Don't leave anything valuable in your car. Expensive car-top carriers will be stolen. Canoe racks should be locked on the roof or removed and stored inside the vehicle.

The most secure way to carry keys and money on a canoe trip is on your body. Money and credit cards are best bagged in sealable storage containers and placed in a pant pocket secured with a heavy diaper pin. Put your key ring in a pant pocket and secure it to your belt with a length of nylon cord. Then stuff a large handkerchief over your keys so they won't fall out of your pocket if you capsize. Pocket knife and change go in another pocket, immobilized by another hanky.

Of course, you can also place these items inside packsacks. However, you are far more likely to lose a pack in a capsize than your pants.

Losing packs and oddities in a capsize

Drill holes through the thwarts of your canoe and install lengths of shock cord through the holes. Maps and oddities placed under the elastic cords usually stay put in a capsize. "Thwart bags" are another solution: You can buy commercial models or make your own from a nylon briefcase. Tie or buckle the case to a thwart and put your valuables inside.

Tip: Attach a chin strap to your hat so you don't lose it in a capsize.

Packs that aren't tied in the canoe may be lost in a capsize. Those that stay with the craft but dangle out may catch on river obstacles and cause the canoe to broach and wrap around a rock.

So either tie packs into the canoe so tightly that they can't possibly fall out, or don't tie them in at all. Running a shoulder strap around a thwart is okay in lake country, but not in rapids.

Retrieving a vehicle stuck in the mud

An unimproved dirt road that leads to a put-in can become a quagmire if it rains hard while you're on the river. If someone in your party has a 4-wheel-drive vehicle and tow cable, you

can put aside concerns. Otherwise, you'd best leave the vehicle on high ground, away from the flood plain of the river. At the very least, turn the rig around so it faces in an escape direction.

Always carry a tow strap, jumper cables and simple tools in your car or truck. Vehicles that are stuck or won't start are among the most common paddling "hazards."

Treble hook in the face, other medical concerns

A treble hook in the face can end a canoe trip immediately. So establish rules—like on which side of the boat you plan to cast—before you fish. If you leave lures attached to lines while you paddle, secure them to the rod with Velcro covers. Every bait shop has them. A capsize and an unsheathed treble hook

can cause a serious wound. So absolutely never leave unguarded fishing lures in your canoe.

Perhaps the most common serious medical problem you are likely to encounter on a canoe trip is a scratched cornea or foreign object (usually, an insect) in the eye.

Last summer, a woman in my whitewater canoeing class got sand beneath her contact lenses when she capsized. The pain was unbearable. I gently lifted each eye lid and flushed out the particles with generous quantities of a sterile irrigation solution. Then I applied a ribbon of ophthalmic ointment (yellow oxide of mercury, ophthalmic 2%, is the non-Rx alternative) inside each lower lid and immobilized the eyes with oval eye patches and microfoam tape. Finally, I administered acetaminophen.

The woman said the pain ceased shortly after I applied the ointment. Next day she called to report that her doctor was so pleased with the treatment that he simply applied more ointment and replaced the bandages. Naturally, I was thrilled I had done things right.

Of all the medications in my kit, ophthalmic ointment and large, oval eye patches have been most useful. I've used these several times to treat eye infections and scratched corneas.

Tip: Eye patches are great for patching blisters.

Getting in over your head

Most canoeing accidents are the result of simply "getting in over your head." For example, the easy riffle you're paddling abruptly becomes a respectable rapid. Suddenly there's a ledge ahead. To avoid the ledge, you must angle your canoe about 30



PADDLING HAZARDS

degrees to the current and paddle backward. You are familiar with the backferry

technique, but you haven't practiced it heavy currents. Panic ensues. You miss your cue and capsize.

The best way to avoid this scenario is to scout every drop and every blind curve before you commit. When you see dancing water ahead, put ashore immediately. Walk the entire rapid and discuss it with your partner. Go with your gut feelings. Resist pressure from friends, defer to caution, and you won't get in over your head.

And a word about your partner. Your skills may be up to the challenge of a difficult run, but your partner's may not. A canoe team needs time—and a few upsetting experiences—to perfect maneuvers. Whitewater tactics are for practiced whitewater teams. If in doubt about your partner's ability, portage, portage, portage!

Fences

Perhaps the most dangerous obstacle a canoeist can encounter is a barbed wire fence that crosses a river. Fences are extremely difficult to spot from the seat of a canoe, especially when the river is high. Livestock fences generally bridge rivers in shallow areas where there are few rapids, so you can usually avoid them with a powerful backferry.

Dams and falls

Dams are much more dangerous than falls. The hazard lies in the uniform drop and accompanying backroller (eddy) at the base. Float a small log over a dam and watch it tumble over and over, trapped in the turbulence below. Now picture your canoe doing the same thing.

Broaching at the base of a dam may mean certain death. Your only recourse in an upset may be to abandon the craft and your life jacket, and swim down under the eddy to the current beneath—a frightening maneuver that calls for cool determination and a realization of what's happening.

If, heaven forbid, you find yourself swept over a dam with no recourse but to obey the flow, then drive the canoe forward with all your might. Your only salvation may be to get enough forward speed to breach the dangerous backroller. Running a dam—even a low one—is a life-threatening situation. Never attempt it.

Strainers (also called “sweepers”)

A strainer results when the river flows between the branches of a submerged tree. If you get sucked into one, there may be no escape, especially if you're wearing loose clothing or a bulky life vest that catches in the debris.

Strainers are every bit as dangerous as dams—maybe more so because they don't look ominous from above. Strainers are most difficult to avoid on small, tight rivers that have lots of curves. You can usually backferry around a strainer if you see it in time.

Rule: Always stay on the inside of river bends. Backferry around blind corners—tail of the canoe nearly touching the inside shore. Only when the river is very low should you seek the outside curve.

Capsizing in ice-cold water

Lengthy articles have appeared in *Boat PA* about how you should dress for ice-water canoeing. If you are unfamiliar with wet suits

and dry suits, wool, pile, polypropylene and garment-layering, then you'd best stay off the river until it warms.

Many canoeists compute the “chill index” of a river by taking the temperature of the air and water. If the sum of the two numbers is less than 100, a wet suit or dry suit is absolutely essential.

Entanglement, entrapment

Avoid wearing long coats, ponchos or anything dangling around your neck on a string. These items are all likely to be caught on submerged tree branches or between rocks.

Avoid the natural tendency to stand up in the water if you capsize. If a foot becomes wedged between rocks in a strong current, the river may mow you down and drown you. You can avoid most entrapment situations if you absolutely never stand in water (moving current) that is over knee-deep.

If you upset in a strong current, your best life preserver is the canoe, and you should stay with it unless doing so will endanger your life. If the water is very cold and there is no support crew to come to your rescue, leave the canoe immediately and swim directly to shore. Get on your back, feet pointed downstream, legs held high to prevent somersaulting in the current. Use your feet and canoe paddle to ward off rocks. Again, I urge you to resist the temptation to “stand up” in the current. Rely on your life jacket to support you.

Running upwind and downwind

Scenario for going downwind: For a while you are powered down the lake by a gentle following breeze. A stern rudder keeps you on track as the wind intensifies. Suddenly, the canoe begins to surf on the waves and you lose control. What should you do?

If you back paddle, you'll capsize for sure. Continue to rudder and you may do the same. But if you can get up enough forward speed to climb off the wave face, the surf will subside.

Fortunately, canoes seldom surf very well for very long. Invariably, the wave passes and the stern falls into the following trough. Whether or not the boat fills with water from the following wave depends on your ability to climb out of the hole. Generally, if the bow person keeps paddling hard while the stern continues to rudder, you'll do fine.

Working upwind is far safer than going with the flow. All you need to do is keep from swamping as you knife into oncoming waves.

Canoeing experts advise you to “quarter” waves at a slight angle as the bow beats upwind. This procedure shortens the canoe's waterline and makes it easier for the craft to fit between waves. This is supposed to translate into a drier ride.

Don't you believe it! A canoe—especially, a short, highly rockered canoe—on a quartering tack is on the edge of broaching to the wind. You need a practiced team to maintain control. One mistake and the crew goes swimming. For this reason, “quartering waves” is a tactic that is best reserved for experts. Beginners are better off simply to point the bow upwind and keep paddling.

Tip: The canoe will rise more easily to oncoming waves if both partners move closer to the center of the craft.

Be aware that reading about canoeing cannot take the place of on-water practice. However, studying competent procedures speeds the learning curve, as does practice under the watchful eyes of experienced paddlers. There are no set formulas for avoiding the hazards of canoesport. Good judgment must simmer in a stew of time and humility.



STEALTH TOWBOAT PROVES DEADLY TO BOATER

by J. Warren Taylor and W. David Eley

On July 16, 1993, on the Monongahela River, a towboat ran over a pleasure craft and killed the operator. The U.S. Coast Guard conducted a joint investigation with the Pennsylvania Fish and Boat Commission. Here are some facts of the investigation.

In the early morning hours of July 16, 1993, a towboat was downbound on the Monongahela River at mile marker 29.0, pushing three jumbo barges loaded with coal. The tow was 600 feet long and the speed was around 6 mph (approximately 5.3 knots). Investigators determined that the navigation lights were working, making the towboat clearly visible at night on that stretch of the river. All equipment including radar was also working properly. At the time of the accident, ground fog was minimal, hovering around one foot off the water. Visibility was 1/2-mile and rated by the towboat captain as an 8 on a scale of 1 to 10.

The recreational boat was unlit and adrift in the channel. There was one person aboard and one person in the water when the tragic collision occurred. Unaware of the collision, the towboat operator continued to the next Lock and Dam where he was informed of an accident.

Interviews with the towboat crew and the surviving boater, and physical evidence gathered on the scene, paint a disturbing picture: A silent, unseen tow, a moment of inattention, poor judgment, and alcohol consumption.

Stealthy tow

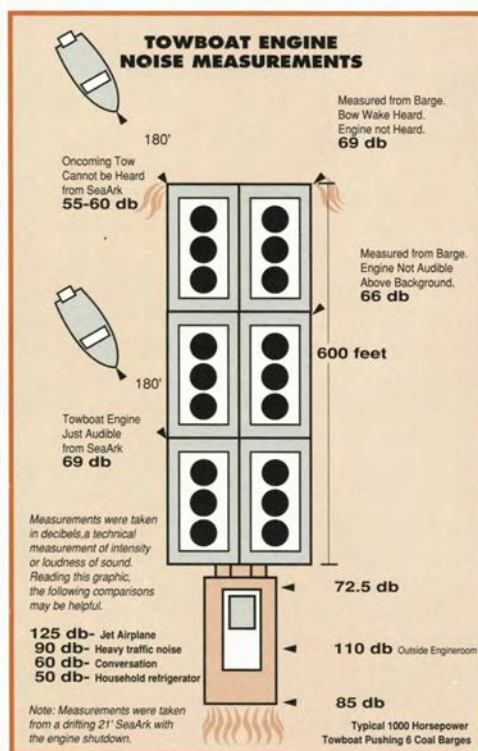
The only witness to the collision was the survivor, who was swimming in the water at the time of the accident. His eyewitness account can be summed up in a few words, "I never heard the tow coming." The Coast Guard's investigation confirmed this account. Using a sophisticated sound level meter, Coast Guard investigators determined that



from a distance of 300 feet in front of a medium-sized towboat, the engines cannot be heard. The tow was two times that length.

Moment of inattention

Before the collision, one person was in the boat relaxing and the other was floating in the water. If the boaters had been alert, they would have seen the approaching tow 5 to 10 minutes before the collision. Apparently, a moment of inattention by the recreational boaters allowed the "stealthy" tow to "sneak up" on them.



Poor judgment

The recreational boat was unlit and in the navigation channel at night. Ground fog was also in the area. In addition, the boat was in the bend of a river where visibility upriver and downriver was restricted.

Alcohol consumption

Both the recreational boat operator and the survivor had been drinking several hours before the accident.

This accident could have been prevented. To prevent similar mishaps, the Coast Guard recommends the following for recreational boaters on our rivers with commercial traffic.

- Despite their size and tremendous horsepower, towboats can be stealthy. Therefore, constant vigilance and situational awareness should be maintained, especially at night or during times of restricted visibility.

- Drifting in the navigable channel or near areas of towboat activity must be avoided (obtain river charts from the Army Corps of Engineers to identify these areas). Remember that towboats may need 600 feet to 1/4-mile to stop, so maintain your ability to maneuver in areas of towboat activity.

- Don't mix alcohol with boating. Alcohol contributes to poor judgment and loss of situational awareness.

- Always wear a personal flotation device. Coroners rarely have to remove life preservers from drowned victims.

- Be familiar with and comply with navigation rules at all times.

- Complete a safe boating course through a local power squadron, the Coast Guard Auxiliary, Fish and Boat Commission or other water safety group to understand the hazards and responsibilities of boating.

The authors are U.S. Coast Guardsmen in the Marine Safety Office, Pittsburgh.

CORROSION

IS EATING YOUR BOAT

by Gary Diamond

"I don't keep my boat in a slip at the marina, it's sitting on the trailer parked next to the garage. Why did the wiring go bad in just two seasons?" Although you would expect someone who kept his boat in a saltwater environment to ask his marine dealer this kind of question, it's not at all unusual for the same statement to be made by a boater operating exclusively on a central PA lake.

Corrosion is the enemy of all metals, especially those carrying electric current to various parts of your boat. It comes in various forms, some of which are quite subtle, eating away at various parts of your boat in places you never dreamed possible. If undetected or ignored, the result is always the same—total

fact that many aluminum-hulled boats are riveted with hardened rivets, thus attaching more dissimilar metal plates to your newly created battery.

At this point you might ask yourself, "Where did the acid come from a boat sitting outside on the trailer—not in an acid vat?" Good question. The acid originates from several sources, most of which begin inside your car's engine. Then it enters a complex exhaust system consisting of at least one muffler and possibly two catalytic converters. It exits the tail-pipe cleansed of some hydro-carbon emissions, but there's always a tell-tale odor that smells like rotten eggs associated with automobile exhaust—sulphur.

The heated sulfuric gases rise into the upper atmosphere, combine with particles of water, and eventually return as acid rain. Rain samples throughout the Mid-Atlantic Region clearly show several hotspots, locations where the acidity is so severe, the rain has the same pH as strong vinegar. Despite modern technology and rapid scientific advances in meteorology, we still can't control the weather. However, there are a few steps we can take to deter the corrosive effects of acid precipitation on aluminum boats.

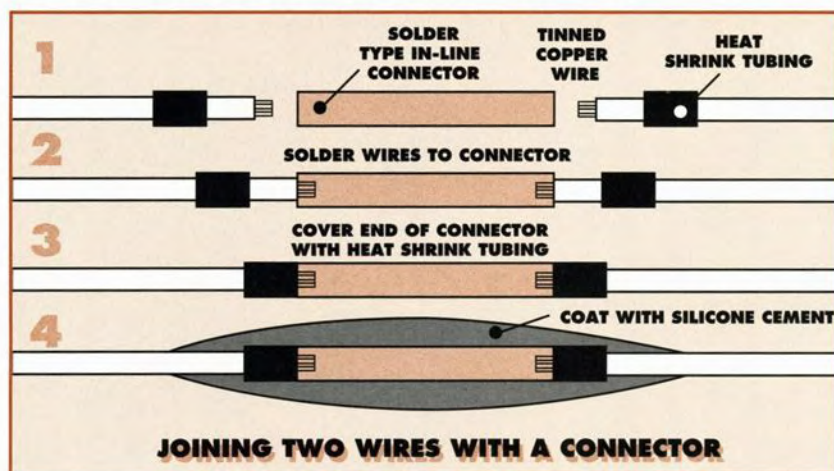
For more than a century, saltwater boaters have prevented corrosion of their boat's metal components by installing a sacrificial zinc anode beneath the waterline. This bluish-white metal originates as crystals during the smelting

of iron. When attached to your boat's hull, electrolytic zinc reduces the effects of electrolysis by a significant degree by becoming a sacrificial anode—it essentially absorbs the corrosion before it attacks the hull.

Additional protection can be obtained by cleaning the boat, inside and out, spraying it with a mild solution of warm water and liquid detergent. The best way to apply the mixture is with a high pressure wash system, such as those found at a self-service car wash. After washing, be sure to rinse the boat thoroughly with fresh water and allow it to dry completely. Then cover the entire boat with a tarpaulin, leaving an opening at each end for ventilation.

The tarp goes a long way in sheltering the hull from acid precipitation, and it protects the craft's interior from the sun's harmful rays.

Whether your boat's used exclusively in freshwater, or occasionally to saltwater or brackish-water places near Pennsylvania



destruction of the metal, and sometimes, severe damage to your boat, particularly if it's aluminum.

Marine-grade aluminum is durable, tough and highly resistant to different kinds of corrosion. Nevertheless, like all forms of aluminum, it has some inherent problems. For example, most aluminum hulls are made of various sections of pre-cut and stretch-formed aluminum sheeting that's riveted together. A zig-zag riveting pattern ensures maximum strength where pieces are joined and soft. A waterproof sealant placed between the joints prevents leakage. Structurally, the aluminum hull's strongest points are where the various sections are joined by rivets.

Problems arise when electrical or electronic equipment is grounded to the aluminum hull. This indirectly connects the negative terminal of the boat's battery to the hull, which essentially transforms it into a huge, negatively charged battery plate. Toss on a little acid, some positively charged electrons, and *voilà*, your entire boat just became a low-voltage battery. Add to this the



nia, there's an even chance that corrosion has already begun to deteriorate your boat's wiring. This corrosion usually begins in subtle areas, hidden beneath crimp-on connectors, inside fuse block compartments, in toggle switches and sometimes in your outboard's main wiring harness connector. It can even migrate several feet up a length of stranded copper wire before you notice its serious effects.

The stranded wire acts as a wick, drawing moisture with a capillary action like the wick of a kerosene lantern. The only indication you have of problems is a slight discoloration of the wire where it's fastened to a terminal or crimp-on connector. If undetected or ignored, serious consequences can occur, including extensive damage to your outboard's complex and expensive electronic ignition system.

Fortunately, the solution to this age-old problem is quite simple and inexpensive, but it takes a day or two of work to complete the task.

Crimp-on connectors are usually made of tinned copper sleeves coated with plastic insulation. Although they're convenient and easy to install, they have one inherent flaw—corrosion. Moisture enters the ends of all types of crimp-on connectors, spade lugs and Y-connectors, attacks the bared copper and migrates up the wire. The only way to prevent this is to seal the ends, but this must be done when the connectors are installed.

If you're buying a new boat, insist that during rigging, all in-line connections are soldered, sleeved with heat-shrink tubing and then completely sealed with silicone cement. If your current boat's wiring has already begun to corrode, but it's still in the early stages, you may be able to salvage some of the remaining wiring before damage occurs.

This is accomplished first by inspecting each connector and terminal lug to see that they're not corroded. Dry them thoroughly with a hair dryer, and then cover the connectors with a thin layer of silicone cement. Make sure the coating extends over the wire's insulation.

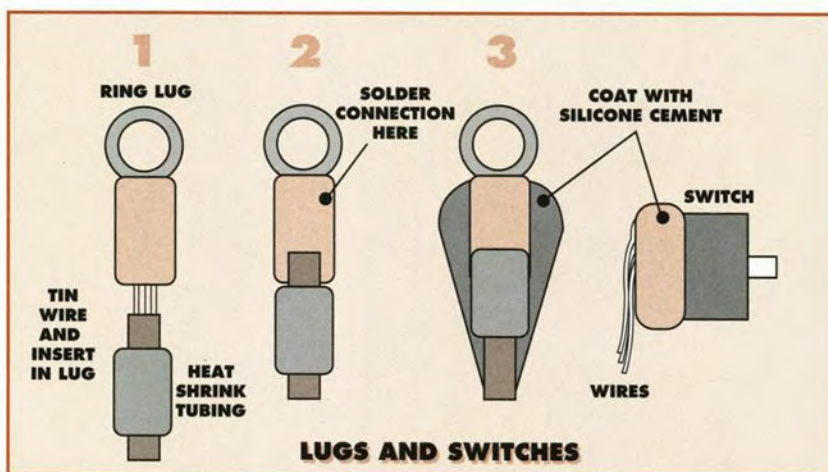
If you see corrosion, before doing anything else, disconnect

switches. Most marine dealers and manufacturers use crimp-style lugs for these connections because they're inexpensive and quick to install. Carefully examine the wire and snip off any

the boat's battery. This ensures that the engine's electronic ignition system is protected from an inadvertent short circuit. Then, beginning at the connector, scrape a small area of insulation from the wire and carefully examine the copper strands for corrosion. Corroded wire is dark brown during the early stages, but as deterioration continues, the color changes to a bright shade of bluish-green.

If the newly exposed wire isn't clean, bright and shiny, snip away the corroded section, slip a short length of heat-shrink tubing over the wire and solder a new connector in place. Slide the heat-shrink tube over the connection, heat it with a hair dryer, and then cover the entire connection with silicone cement.

Spade and ring lugs are primarily used to attach wires to fuse blocks and



corroded sections until you encounter clean, shiny copper. Strip back about a half-inch of insulation, tin the bared wire with resin-core solder and insert it into a solder-type lug until the insulation's inside the back end. Solder the connection and coat the back end and wire with silicone cement.

After the silicone coating is dry to the touch, about two hours, the lugs can then be re-attached to their respective switches on fuse block locations. The fuse block itself can be protected by periodically spraying with a light coat of WD-40 or similar agent. The back sides of switches can be moisture-proofed by coating them with a layer of silicone cement after the wires are re-attached.

Wiring protected in this manner will last almost indefinitely. Most connections are totally sealed from the elements, thereby eliminating the problems associated with corrosion. Unfortunately, the only connection that cannot be totally sealed is your boat's battery cables. However, periodic inspection, cleaning and routine maintenance go a long way in eliminating battery problems before they begin.

The Ducker

TIMEWORN PENNSYLVANIA BOAT

by T.B.T. Baldwin



A snazzy-looking character long absent from the Philadelphia waterfront has turned up enjoying the good life at a storied waterfront town in New England. This tough, who used to dominate the Delaware River docks, has been lying low while swooning admirers ask little more than to rub the ruffian down with oil and have their picture taken posing together.

A mobster? A lothario? No. We are talking about a boat.

It is one of Pennsylvania's earliest sport boats, called the Delaware River Ducker, a 15-foot-long gunning craft that later evolved into a fleet of racing sailboats.

The Ducker, as she is called, is enjoying prominence as one of the few boats to be on display at the Mystic Seaport Museum's small boat shed in Mystic, Connecticut. It is the only Pennsylvania boat to be so honored, though Durham Boats, the barge-like craft that ferried George Washington's troops across the

Delaware in 1776, are displayed at Washington Crossing Park in Bucks County, north of Philadelphia.

The Mystic Museum, however, is a few cuts above the boat display at Washington Crossing. Mystic is to boats what Williamsburg, VA, is to candlesticks, what Pittsburgh is to steel or Titusville is to oil.

It is one of Pennsylvania's earliest sport boats, called the Delaware River Ducker, a 15-foot-long gunning craft that later evolved into a fleet of racing sailboats.

Mystic represents the founding and development of American seafaring as much as it preserves important pieces of American maritime history from ages ago as well as yesterday. It is no small honor for a boat design to join Mystic's collection.

"It shows the boat represents something important about boating history," says Peter Vermilya, the associate curator of small watercraft at the museum. "The Ducker is a unique design that brought many people, rich and poor, onto the water. It was a hunting boat and a racing boat. Elements of the Ducker's design are seen in boats built today."

At first glance, the Delaware Ducker is a canoe. Then you realize she is too stable. So she becomes a rowboat. But she is a double-ender with a swept-up sheer. She is wide of beam, four feet, and her center of lateral resistance, the point on which a sailboat pivots, is located more forward than on most other small craft.

It is at this point where the Ducker fails to fall into a broader category. She, in fact, is entirely different, and if anything, defines a separate category of small boat. This category is the family of lightweight and speedy workboats of two centuries ago that became the ancestors of today's trailerable sport boats. The Duckers and a few not-so-closely related others (for example, Garveys, Sneakboxes and Philadelphia's Melonseeds and Tuck-ups) evolved into today's john boats, the aluminum "Vees" and the flat sailboats such as Sunfish and Lasers.

19th-century use

The Ducker is a 19th-century gunning and fishing boat that saw widespread service in the swamps around Philadelphia. Paddled or poled, she became a racehorse under sail. Fleets of Duckers could be seen prowling the Delaware River marshes, their owners out for a morning shoot of bird or muskrat. The hunter sat, stood or crouched forward while his crew poled the boat through the shallows.

Afterward, when the sea breezes arrived, white or brown sails suddenly appeared on the little boats and the gunners spent the afternoon racing. They carried a crew of as many as four.

The sailors drove beneath a very simple sprit rig, which is a rectangular sail held aloft by a mast and "sprit." The sprit is a straight, thin pole that held the sail's upper, outside corner aloft and away from the mast. The sprit's bottom attached to the mast just inches above the deck.

Such a rig, by itself, puts the Ducker onto a noteworthy shelf of maritime history, which all by itself might open doors at exclusive Mystic. The knot arrangement where the sprit met the mast maintains in name alone one of boating's most illustrious titles. It is called the "snotter." Don't ask where the name came from. A snotter, however, allows crews of sprit-rigged boats to control the tightness of the sail. Forget the dreadful name. The rig works to extreme efficiency.

Racing

This Ducker racing became lively. It was after the American Civil War. City life bustled with the exciting growth of the Industrial Revolution. Boat clubs in Philadelphia's patchwork of neighborhoods adopted the Ducker, among some others, as a suitable boat to match-test their sailing skills.



"The Ducker is a unique design that brought many people, rich and poor, onto the water.

It was a hunting boat and a racing boat.

Elements of the Ducker's design are seen in boats built today."

The boats, small and light enough for two men to carry to the water, attracted crowds of racing fans to the Delaware riverbank. Bewhiskered gents in bowlers and ladies carrying parasols lined the shore, hoisting lemonades and cheering for their favorites.

Indeed, Sunday afternoon wagering on these boats emerged and prospered. Quite naturally, this competition brought out all sorts of corners that the sailors managed to cut. A boat might start a race with a crew of four men of small build. Then at the start of the downwind leg, when a lighter boat might make up for errant seamanship, two of the crew would be discreetly "dumped" into the river. This presumed they were strong swimmers and had not consumed too much from the boat's beer barrel, which on these Sunday regattas was as important to the Ducker's performance as was the sail, the sprit or even, well, the snotter.

Modern Duckers

The Ducker is still on the market, avail-

able through specialty boat builders and usually made of laminated wood and fiberglass, or simply lapstrake wood planks. The modern Ducker can be an ideal two-person, car-topable boat, weighing about the same as a small canoe, 70 to 120 pounds.

The Ducker sails on most points of wind as fast as any modern, planing sailboat of its size. It is roomier and dryer than these

latecomers. Some like to call her an ideal "picnic" cruiser, with plenty of room to spread out a lunch basket for two.

The Ducker just might be the most romantic of small boats, and one wonders how many 19th-century Pennsylvania marriages sprung from an afternoon's boat ride. Consider the Ducker's rowing capabilities. She tracks forward as well as backward, with one set of rowing locks and no athwartship seats, enabling a young man to row a young woman while both of them sit facing each other on the boat's bottom—or at least on cushions—and still be close enough, without his letting go

the oars or her, her bouquet, to lean forward slightly and kiss.



Ducker Builders

Information on where to seek out builders of Duckers can be gotten through the Seaport Museum at Mystic, or the Philadelphia Maritime Museum. Duckers and their owners usually turn out at the Constitution Cup, the annual picnic and regatta staged each September by the Philadelphia Museum. This event is held at a different yacht club each year, so call the Museum for specifics.

- Mystic Seaport Museum, P.O. Box 6000, 50 Greenmanville Avenue, Mystic, CT 06355-0990. Phone: (203) 572-0711.

- Philadelphia Maritime Museum, 321 Chestnut Street, Philadelphia, PA 19106-2779. Phone: (215) 925-5439.

Boating on the **THREE RIVERS PO**

by Jeff Knapp





Pittsburgh can thank its three major rivers for its once prominent status as one of the country's industrial powerhouses. Decades ago the Monongahela, Allegheny and Ohio rivers provided the lifeblood for the region's thriving steel industry, centered in the "Burgh."

Times have changed, and Pittsburgh's work force has, to a large degree, switched collar colors—from blue to white. The significance of the rivers, however, hasn't declined, though the usage has definitely shifted from industrial to recreational. These days, the Three Rivers Pool—the portions of the Mon, Allegheny and Ohio rivers that bisect Pittsburgh—furnishes one of the more unique experiences available to Pennsylvania boaters.

The Three Rivers Pool, or Pittsburgh Pool as it's also dubbed, is anchored by Point State Park, where the Monongahela and Allegheny rivers merge to form the Ohio River. At this site Fort Pitt and Fort Duquesne once stood during the incipient phase of our country. The remains of these forts provide much of the attraction of the park.

Behind Point State Park sits one of the more impressive skylines in the country, as the Golden Triangle provides a backdrop that illustrates the city's rebirth. Three Rivers Stadium sits on the banks of the Allegheny, just across from the Point, before the river's merger with the Mon.

Just up the Mon River from the Point lies Station Square, a complex of shops and restaurants located at the former site of the city's train station. Station Square also serves as the port of the Gateway Clipper Fleet, an extensive fleet of tour vessels that operates on the rivers.

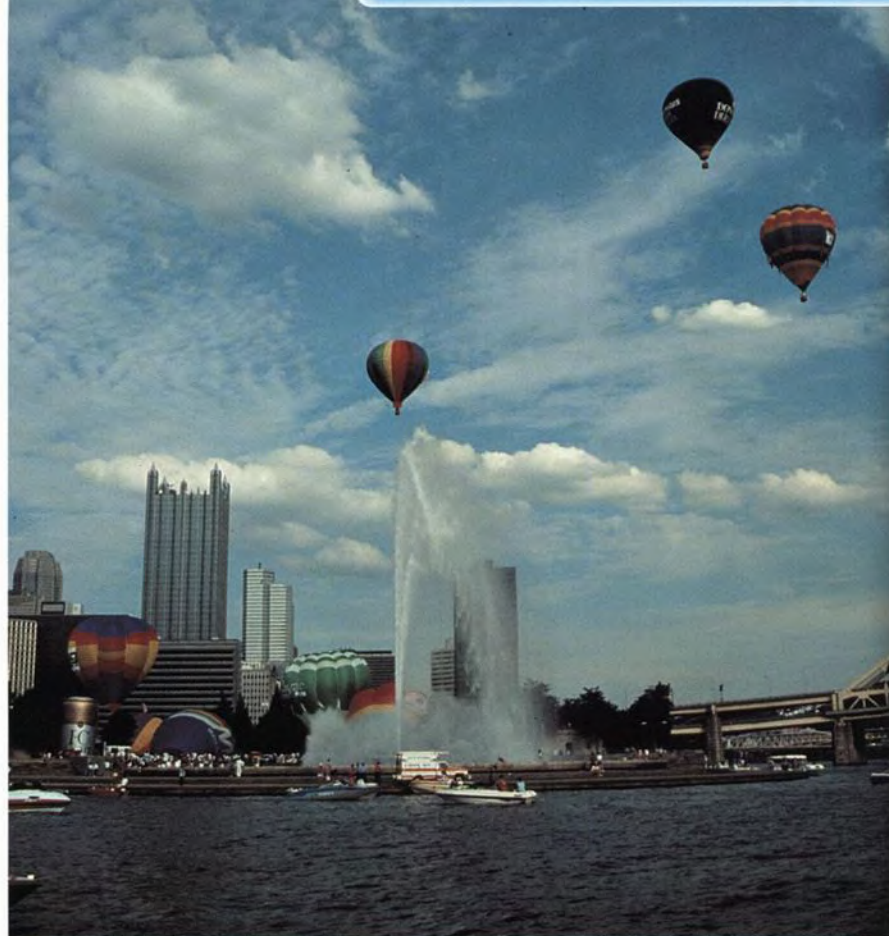
The Three Rivers Pool extends up the Allegheny River nearly seven miles to Lock & Dam 2, commonly called the Highland Park Dam. Up the Mon River the pool goes upriver 11 miles to Lock & Dam 2 at North Braddock. Down the Ohio River, it stretches six more miles downriver to the Emsworth Locks & Dams, which straddle Neville Island. This area adds up to 24 miles of boating without the need of passing through a lock.

Because of its location in the state's second most populated area, boating the Three Rivers Pool brings with it some special considerations. For one, public access is limited. The city of Pittsburgh has an excellent facility, the South Side Access, located on the Mon River near the Birmingham Street Bridge. It's found at the foot of 18th Street off E. Carson Street.

Private marinas are numerous, however, and are outlined in the Fish and Boat Commission's publication *Guide to Public Fishing Waters and Boating Access*, available for \$2 postpaid from: Pennsylvania Fish and Boat Commission, Magazines, Publications Section, P.O. Box 67000, Harrisburg, PA 17106-7000. Pennsylvania residents please add 6% sales tax.

photos: Andrew Wagner

Boating on the THREE RIVERS POOL



Excuses

Fish and Boat Commission WCOs from Allegheny County tabulated excuses during 1993 for violating the no-wake zone at the Point. Provided by the Commission's Southwest Regional Manager Tom Qualters, here's what they listed as the 16 best excuses:

16. "Everybody else is going fast."
15. "My boat won't turn at slow speed."
14. "My boat leaves less wake at high speeds."
13. "We were attacked by bees."
12. "My jet ski won't go any slower."
11. "If I go slow, the boat rocks and my drinks spill."
10. "My prop is broken."
9. "My idle isn't working."
8. "My engine won't run at idle."
7. "If I go slow my boat stalls."
6. "If I go slow the water comes over the bow."
5. Officer: "Did you see the signs on the bridge?"
Boater: "Yes!"
Officer: "Did you read them?"
Boater: "I was going too fast."
4. "I'm a new boater."
3. "My boat won't go any slower."
2. "I was going fast because my engine was overheating."
1. "What are you guys doing out here at three in the morning?"

While you're at it, if you plan to spend extensive time boating the Three Rivers Pool, or any other sections of these rivers, it would pay to invest in river charts. Books are available for each river (most recent price was \$6 each) from the U.S. Army Corps of Engineers, 1000 Liberty Avenue, Pittsburgh, PA 15222. They are invaluable to the serious boater.

Another item to consider is a no-wake zone that, according to the Fish and Boat Commission's Southwest Regional Manager Tom Qualters, is in effect during certain times of the summer months.

During summertime weekends—from May 1 to October 1—a slow, minimum-height-swell speed zone is in effect in the vicinity of Point State Park. More specifically, it extends up the Allegheny to the Fort Duquesne Bridge, up the Mon to the Fort Pitt Bridge, and down the Ohio to the West End Bridge. Times run from 3:00 p.m. on Friday to midnight Sunday. The same regulation is in effect during weekday holidays from 3:00 p.m. of the day preceding the holiday to midnight of the holiday.

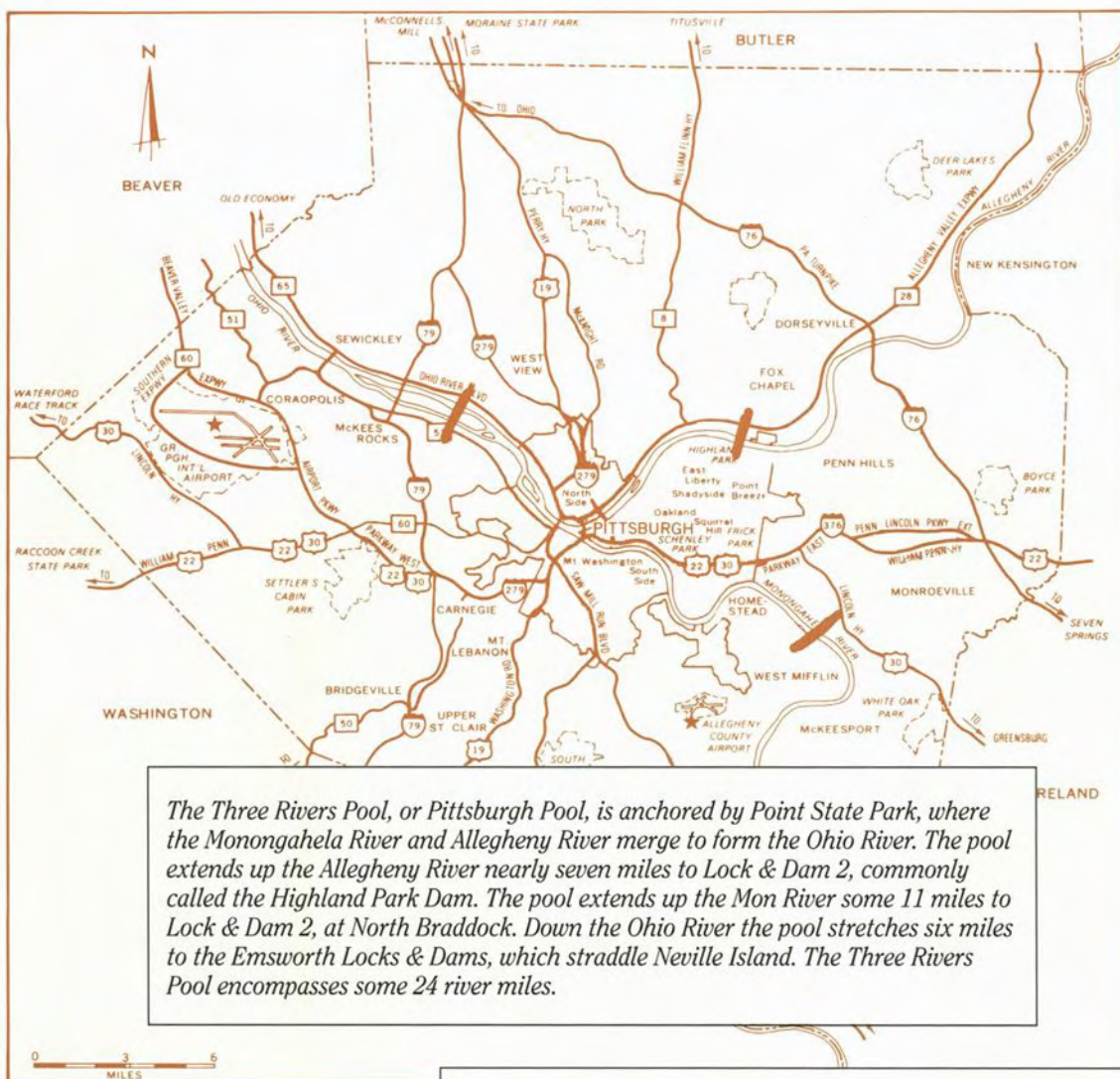
The Fish and Boat Commission, under the advice of the Boating Advisory Board, instituted this regulation in 1992 because of an increase in the number of serious boating accidents occurring there, some involving fatalities.

Qualters said many boaters grumbled when the new regulation went into effect. A couple of years later, not only are they accepting it, but many prefer it.

"It's one of the best things we've ever done," reports Qualters. "The boaters are thrilled with it. They go down there and they raft up and have a great old time. Families can go down there and have a beautiful day."

The setting lends itself, perhaps more than at any other state waterway, to riverside dining and lounging. Establishments located along the rivers cater to boaters. Unfortunately, the ease of procuring refreshment brings with it alcohol-related boating problems. Qualters notes that Fish and Boat Commission patrols are on the lookout for drinking and boating, and have a good relationship with the city of Pittsburgh police, necessary in the apprehension of boaters who fail to pass sobriety tests.

On a more positive note, the city does its best to use the rivers during annual events and festivals. Some of these, such



even hit them head on. The barge will have a red and green light on each corner, but there's a lot of space in between. People just don't recognize what they are. And the barges are so far out in front of the tow that you don't hear the engines."

One of the distinctive things of boating the Three Rivers Pool is that you don't have to be saddled down to the 20-odd miles found there. By "locking through" you can venture for miles upriver and down. The Corps of Engineers can provide you with a pamphlet on this procedure. It's available for free from the Corps.

Use the same address for the river charts.



Activities, Events

The following events will take place on or near the Three Rivers Pool during 1995, as provided by the Greater Pittsburgh Convention and Visitors Bureau.

Three Rivers Arts Festival (Downtown)

Arts, crafts and food abound at this 17-day festival where new exhibitors are introduced daily. For over 35 years visitors have enjoyed the free performances and the artist's market at Gateway Plaza and Point State Park.

Fourth of July Celebration (Point State Park)

The Pittsburgh Symphony Orchestra provides a rousing concert under the stars with fireworks at Point State Park.

Three Rivers Regatta (Point State Park)

Pittsburgh's rivers and shores play host to the world's largest regatta. A free, family-oriented weekend full of thrilling air shows, on-land events as well as Formula One powerboat races, hot air balloon races, fireworks and water skiing demonstrations.

Contact the Greater Pittsburgh Convention and Visitors Bureau for the specific dates, as well as additional travel information on the Pittsburgh area: Four Gateway Center, Pittsburgh, PA 15222, or phone 412-281-7711.—JK.

as the annual Fourth of July fireworks, can be taken in by boat. Several of the riverside establishments coordinate concerts, particularly during the summer months.

For boaters accustomed to navigating lakes, rivers may pose a somewhat different environment. It's at night that Qualters feels the potential for danger is greatest.

"Because the shoreline is so well lit, with the buildings and highways, boaters should proceed at a very slow speed. There's still a great deal of commercial traffic on the rivers—tows and barges. With a lot of these vessels, you can't see them from the side. And they are very quiet. For a boater not used to seeing commercial traffic, it can be very deadly. We've had people run right into the sides of barges, underneath them,

May 1994 Commission Meeting

The Fish and Boat Commission has adopted a regulation designed to improve boating safety by establishing a minimum age for motorboat users in the Commonwealth. Under the regulation, passed at the Commission's meeting last May 23 in State College, no juvenile 11 years of age or younger may operate a boat propelled by a motor greater than 10 horsepower unless at least one person 16 years of age or older is present on the watercraft.

The regulation also requires that any boat operator between the ages of 12 and 15 piloting a craft with a motor of greater than 10 horsepower must possess a Boating Safety Certificate. That requirement would be waived if there is at least one person in the boat 16 years of age or older.

To date, no significant number of accidents in Pennsylvania has been attributed to juvenile motorboat operators. However, the growing popularity of boating, particularly with personal watercraft, is producing more youth operators who get involved in close calls.

"These new boat designs are so fun to zip around in, they're almost like toys. But, of course, they are not toys—they're motorboats," said John Simmons, Director of the Commission's Bureau of Boating.

"Certain levels of responsibility and education are needed for safe operation of all motorcraft, whether they're ATVs cars, boats or whatever. This restriction underscores that fact. This action should elevate the desire of young people to learn correct behavior and to place adequate importance on boating safety."

The ruling makes Pennsylvania the 19th state to adopt some form of boat operation restrictions on youth.

In other business

- Also passed by the Fish and Boat Commission was a ruling eliminating throwable personal flotation devices (PFDs) as the primary lifesaving device on boats less than 16 feet in length. The rule will become effective May 1, 1995, for recreational boaters and May 1, 1996, for livable boats. The change means that all boats

regardless of length or type will be required to carry a wearable PFD for each person on board.

Boats 16 feet or longer will continue to be required also to have at least one throwable PFD on board.

By adopting the regulation change, Pennsylvania's code agrees with rulemaking set forth late last year by the U.S. Coast Guard.

- A slow, minimum-height-swell speed was set in place for Franklin Cove, near Tullytown, Bucks County. The measure also prohibits mooring within 100 feet of docks at a private marina there.

- Other boating issues passed as final rulemaking included a clarification of current regulations prohibiting parasailing on Beltzville Lake, Carbon County.

- A slow, no-wake speed restriction from sunset to sunrise was adopted for Harveys Lake, Luzerne County.

- In response to a request by Pennsylvania Power and Light Company, a regulation was adopted limiting the use of inflatable boats on Lake Chillisquaque, Montour County, to those seven feet in length or more with at least two buoyancy chambers.

- Restrictions on waterskiing and slow, no-wake operation in Tioga and Hammond lakes in Tioga County were eased. A no-wake area on Hammond will be reduced in size, and the restriction for both lakes allowing only one waterskier per vessel will be raised to allow two skiers per vessel.

- An 8 mph restriction on a section of the Allegheny Reservoir, Warren County, was changed to a slow, minimum-height-swell speed.

- A 35 mph daytime speed for weekends and holidays was set for Lake Winola, Wyoming County.

- A number of initiatives were given approval for advertisement of proposed rulemaking, including a speed limit on Treasure and Bimini lakes in Clearfield County and a stretch of the Susquehanna River in Northumberland County. A lessening of motor restrictions on a section of Shenango Lake in Mercer County was also set for proposed rulemaking.

- Other boating items passed as proposed rulemaking included the imposing of a 45 mph speed limit on state park lakes with unlimited motor restrictions, the exemption of official-use boats from certain

miscellaneous restrictions, and the use of radar to enforce speed limits on state waterways.

- A permitting procedure that would allow disabled persons to use motorized vehicles on Commission owned or controlled properties was approved. Such persons must send written requests to the Executive Director, along with a doctor's statement.

In addition, the Commission voted to allow the issuing of permits to disabled persons for the use of crossbows and mechanical spears for gigging.

—Dan Tredinnick.



Commission President Biery Dead at 67

Commission President James S. Biery, Jr., 67, died last May 23. Biery was appointed to the Commission in 1991 by Governor Robert P. Casey. He represented the Sixth District, consisting of Franklin, Perry, Cumberland, Adams, Dauphin, York, Lebanon and Lancaster counties.

At the time of his death, Biery was serving as president of the Commission. He had just completed presiding over four days of Commission meetings in State College and returned to his Harrisburg home.

Among the many tasks Biery undertook as a Commissioner was chairing the search committee involved in selecting a new Commission executive director.

Commissioner Biery was a graduate of Muhlenberg College and a veteran of World War II and the Korean conflict. He was a past president of the Pennsylvania Federation of Sportsmen's Clubs.

RIVER-READING

101

by Cheryl Hornung

Did you ever stop to watch some of those canoeists and kayakers playing on the rivers? Did you ever wonder why you had a hard time motoring your boat up the river while these paddlers seemed to glide mysteriously across it? There is no magic involved. These paddlers just know the river. They use the river's forces to their advantage, instead of letting the river work against them. A large part of any river boating, especially canoeing or kayaking, is river reading. This is knowledge of which all river boaters should be intimately familiar.

Small-boat characteristics

River boating is not as easy as it looks. The best place to learn river boating is to start on a pond or small lake. Learn what your boat can do (after taking a boating course). All boats operate differently, especially on moving water. For example, compare a flat-bottom boat (john boat) with a utility boat (semi-V). These are two types of boats commonly found on our rivers. Flat-bottom boats were not designed to cut through large waves or strong currents. Their stability depends on their size. John boats less than 4 feet wide can capsize easily. Flat bottom boats also have less carrying capacity than other boats their size.

Semi-V, or utility, boats provide the best stability of all types of small boats. They provide the best handling of small boats and they have more weight-carrying capacity.

Regardless of what type of small boat you are in, remember that they are unstable, especially when boating in a strong current. If you stand up to pull in a fish, toss out an anchor or change places, you might be in for a surprise when you hit that water. Always stay low in small boats and move around slowly to avoid capsizing or falling overboard.

River boaters must learn how to read the river's currents and how to operate in these different kinds of currents. Powerboaters cannot always motor through problem or rough areas on moving water. Sometimes, having a motor on a boat makes operators so overconfident that they can boat too close to hazards such as low-head dams. This is where the problems begin. In fact, look at some of our accidents on rivers. Last year, two men lost their lives when their 15-foot open motorboat went over a dam on the Susquehanna River. According to witnesses, one of the men onboard shouted "go faster" as they approached the dam. The owner was an experienced boater who knew the river well. It is possible that they intentionally tried to jump the dam.

**A large part
of boating on
any river is
river-reading.
This is
knowledge of
which all
river boaters
should be
familiar.**



Moving-water characteristics

Consider the basics. Current occurs when water flows downstream. As water flows downstream, it seeks the easiest way—the steepest, most direct, clearest route. The current's speed (or velocity) is affected by the volume of the water coming downstream, the river width and the gradient (slope).

- The volume is the amount of flowing water. It is often ex-

RIVER-READING

101

pressed in cubic feet per second (cfs). The greater the volume of water, the faster it flows.

- A narrow river width constricts the water, forcing it to pile up and move faster. The converging currents meet and often create some kind of turbulence. Wider rivers often have slower, calmer currents.

- The gradient is the steepness of the riverbed. A rapid generally has a steep slope, fast-moving current and shallow water. A pool generally has a less steep slope, a slower moving current and deeper water.

Water moves slower near the bottom of the riverbed because of friction. The faster water is near the surface. This is called laminar flow. The edge of the river often shows a movement called helical flow from the friction of the banks. This contact with the banks produces a spiral current. The slower water around the banks is drawn into the faster surface water toward the middle of the river. This current then spirals down toward the river bottom and then toward shore—like a spring. Drop a twig in the water and look for this helical current to pull the twig downstream.

On a river bend, the water tends to move faster and is deeper toward the outside of the curve (see figure 1). The water piles up on the outside of the bend, cutting into the bank. Debris such as fallen trees and brush (called strainers) also piles up in these areas. Strainers trap solid objects such as overturned boats and people, while allowing water to pass through. Always avoid getting swept into the bank or into a strainer.

The inside of the river bend commonly has the slowest moving water. However, it is often very shallow. These are areas where novices put dings in those shiny new propellers or put scratches in that new paint job. Boaters become pushers, pullers or draggers. Avoid these shallows.

We know that water flows downstream by choosing the easiest route possible until it meets an obstacle and is diverted in another direction. The contours of the riverbed and the geology of the area define the local river. Rivers winding through farmlands are different from the raging rapids rushing over craggy rocks and through narrow hillsides.

Channels are created as water bounces off obstacles and flows around them. In channels with deep water, a downstream “V” is formed as the currents meet in the channel (see figure 2). Rocks or shallow areas are off to the sides, allowing a safe channel down the middle of that downstream V. However, watch the water carefully. Sometimes at the end of the chute, a rock might be hard to see.

An upstream V is formed when the water runs into an obstacle and is forced around it. When you see an upstream V in the river, avoid it. A rock or obstacle is waiting for you.

A rock just above the surface forces the current to flow around it, creating an area of calm water behind it. This calm water has really a slow reversal current. This calm water behind the obstacle is called an eddy. These eddies provide resting spots for boaters out of the main current (see figure 3).


As water flows over the top of a rock just under the surface,

it creates a small wave. This is called a pillow because of the smooth glassy water pouring over the rock. The small wave is tightly curled and forms a small reversal. The current is usually fairly slow.

As water flows over a rock just under the surface in faster moving water, it creates a standing wave, or haystack, just downstream. These waves are really just “standing water,” moving neither upstream nor downstream. Canoeists and kayakers often “surf” or paddle on these stationary waves.

A large obstacle in fast-moving water, forcing water to drop steeply over it, causes a hole, or hydraulic. This water gets trapped in the hole, or depression, and recirculates. As this water recirculates, it can trap and hold solid objects. Avoid these places in small boats. Their waves can easily swamp and capsize you.

Most people know the dangers of going over a low-head dam, but few realize the hazards of the waters below a dam. A dam does not have to be high to be dangerous. A dam with a waterfall only of six inches can kill. Water going over a dam creates a back current, or undertow, that can pull a boat into the turbulence and capsize it. This hydraulic can trap and hold a person or boat. Many dams are not marked and are almost impossible to see from upstream. Know the rivers you plan to travel and always scout ahead.

As you can see, knowing how to read a river can save you much energy and prevent many problems. All rivers are different, so take time to read the river and soon you'll be gliding effortlessly across the surface like some of those canoeing and kayaking experts. 

Courses

The best way to learn how to boat safely is to take a boating course. Contact your local Fish and Boat Commission boating education specialist for the course nearest you.

Central Region. Heidi H. Milbrand, (717) 834-9073. Adams, Lebanon, Bedford, Lycoming, Blair, Mifflin, Bradford, Montour, Cameron, Northumberland, Centre, Perry, Clinton, Potter, Cumberland, Snyder, Dauphin, Sullivan, Franklin, Tioga, Fulton, Union, Huntingdon, York and Juniata counties.

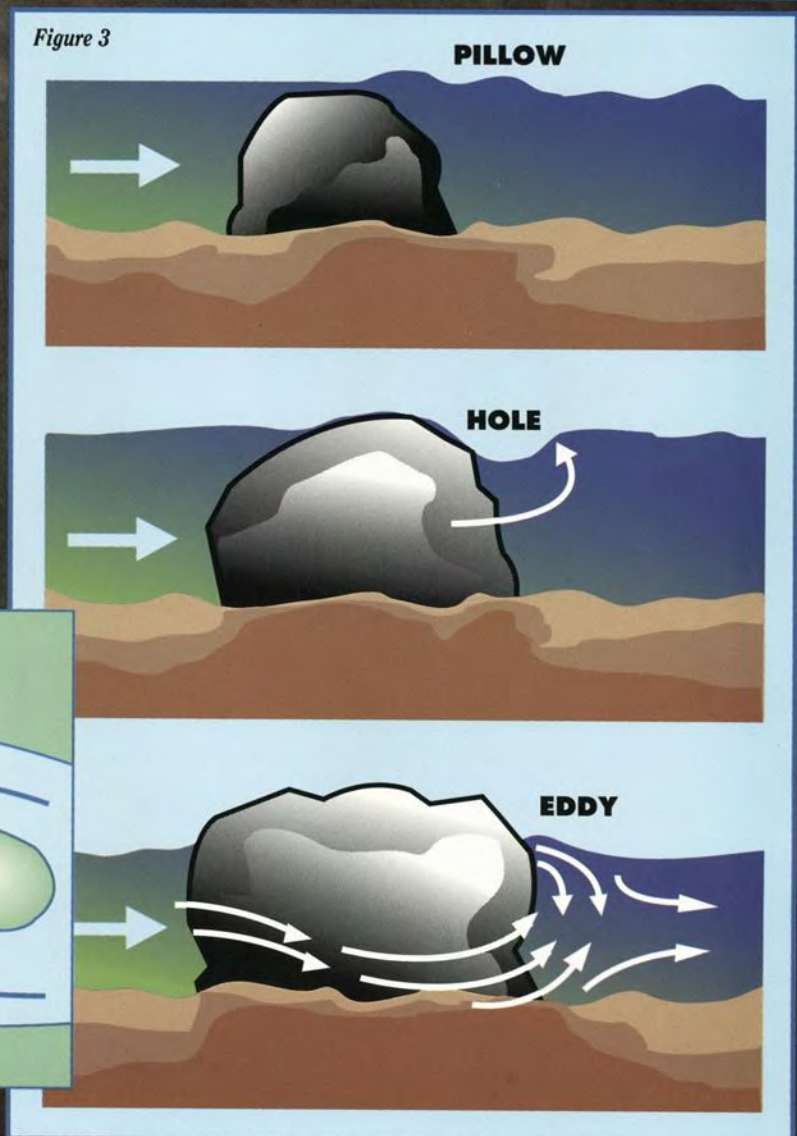
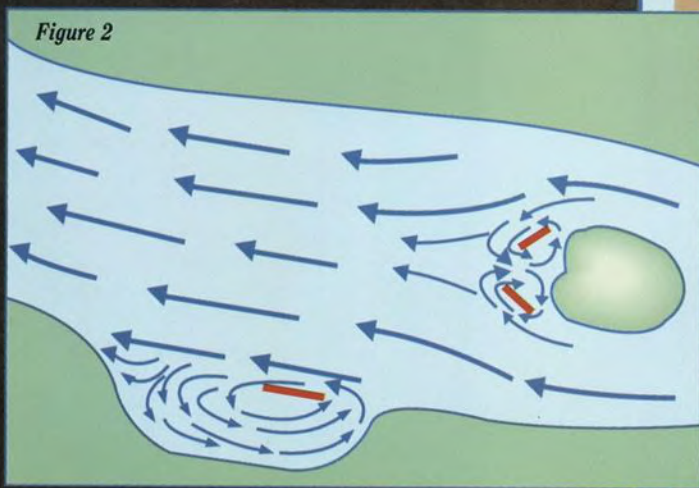
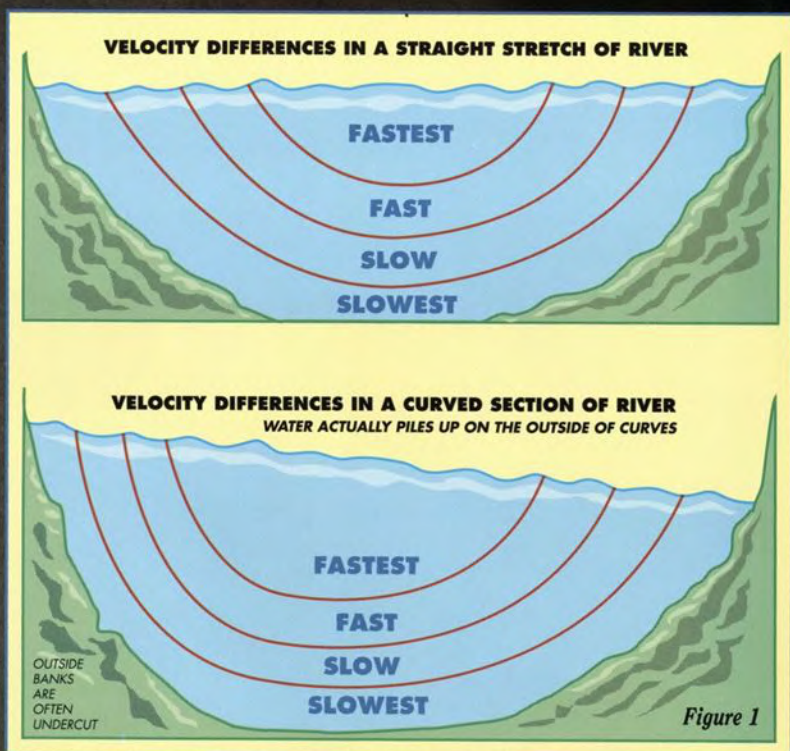
Eastern Region. Mike Roush, (215) 862-0280. Berks, Monroe, Bucks, Montgomery, Carbon, Northampton, Chester, Philadelphia, Columbia, Pike, Delaware, Schuylkill, Lackawanna, Susquehanna, Lancaster, Wayne, Lehigh, Wyoming and Luzerne counties.

Southwest Region. Mike Petrosini (412) 781-6116. Allegheny, Greene, Armstrong, Indiana, Beaver, Lawrence, Butler, Somerset, Cambria,, Washington, Fayette and Westmoreland counties.

Northwest Region. Keith Edwards, (814) 336-2426. Clarion, Jefferson, Clearfield, McKean, Crawford, Mercer, Elk, Venango, Erie, Warren and Forest counties.

International Scale of River Difficulty

All boaters should know that the International Scale of River Difficulty ranks from I to VI. Class I is the slowest, easiest moving water on which to boat. There are few obstructions and small waves. Class II water can have waves up to 3 feet. These classes get more difficult as the numbers increase. Class VI would be like boating over Niagara Falls. So remember that if you are a novice river boater, boat on rivers with a classification of I–CH.



SMART PILOTING

by Jonathan Angharad

WHEN YOU FIND YOURSELF IN ANY SITUATION IN WHICH YOU'RE UNSURE WHAT ANOTHER BOATER WILL DO, SLOW DOWN. NEVER ASSUME THAT ANOTHER BOAT OPERATOR KNOWS THE RULES OF THE ROAD. EVEN WHEN YOU CLEARLY HAVE THE RIGHT OF WAY, NEVER ASSUME THAT ANOTHER BOATER KNOWS THAT.



A friend and I were cruising aboard his new boat one Saturday near Philadelphia. While we zipped along in open water, another boat barreled toward us on a collision course perpendicular to our path from the starboard side.

"Watch that nut," I said.

"No sweat. I have the right of way," my partner said.

I looked up. "Back off. Just let him go," I said. Luckily, the other boater turned sharply to his starboard side, running parallel to our course.

My partner and I were lucky. I don't like to think about what could have happened if that other boater hadn't changed course. The rules of the road in this case were clear—the right of way was actually the other guy's. During that tense moment on open water, I realized that my partner wasn't as knowledgeable a boater as he was a fisherman.

Then I thought of my own novice boating experience some 26 years ago. If I could cash in all my credits from the school of hard knocks and learn a few lessons an easier way, I would. My piloting and seamanship training would have been different. Here are some things I'd change.

Boating course

For one thing, I would have taken a boating course, even after years of experience fishing from my boat. I'm lucky, because during all the times I stood in my 12-foot boat, wearing no PFD, I simply didn't realize the danger. And that goes for stern anchoring and boating on cold water.

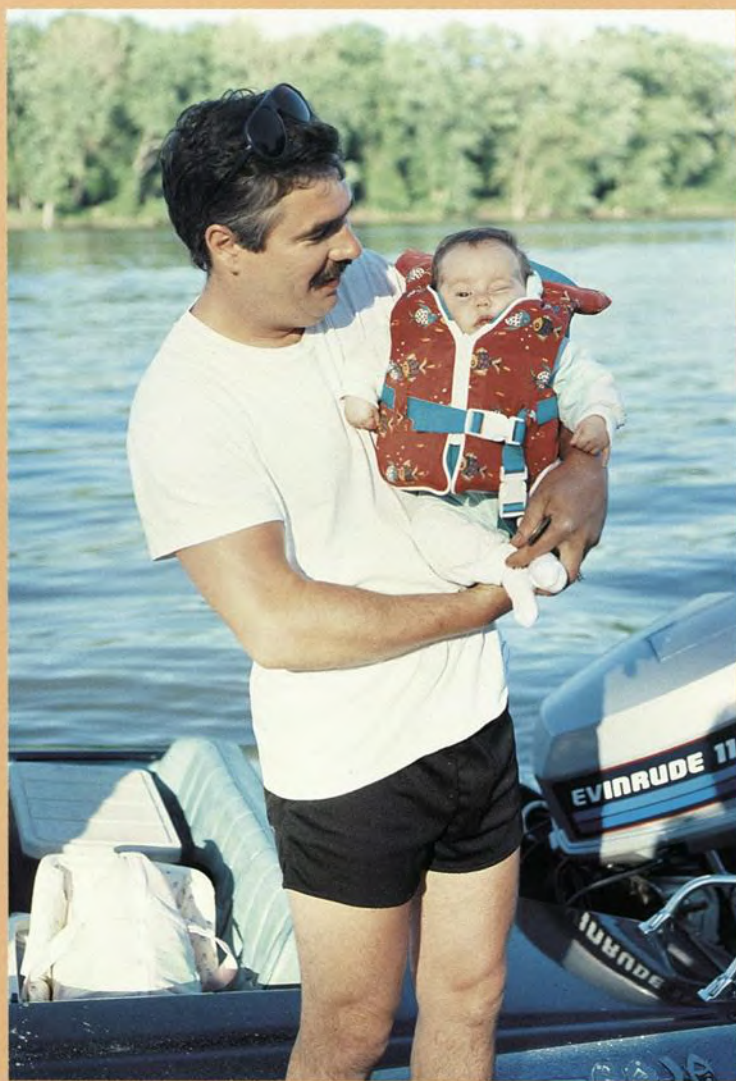
The U.S. Coast Guard Auxiliary, U.S. Power Squadrons and the American Red Cross offer thorough, well-planned courses taught by experts. The subjects of these courses range from canoeing and kayaking to handling the largest boats. Fish and Boat Commission boating safety specialists also offer courses, as do other Commission-trained instructors. I highly recommend the 8-hour adult classroom course "Basic Boating." For class information, call the Commission at (717) 657-4540.

The BOAT/U.S. Foundation maintains a toll-free hotline to find a boating course near you. That number is (800) 336-BOAT. The U.S. Coast Guard Auxiliary Hotline also provides help in finding a boating course. The number is (800) AUX-USCG.

Rules of the road

The rules of the road are the guidelines boaters use to avoid collisions and dangerous situations. They are important to learn because our waterways are not like neighborhood streets with signs to direct our speed and just about our every move. Unless you know the rules of the road, boating can seem like a free-for-all.

One important lesson I learned is to operate a boat defensively. When you find yourself in any situation in which you're unsure what another boater will do, slow down. Never assume that another boat operator knows the rules of the road. Even when you clearly have the right of way, never assume that another boater knows that.



EVERY BOATER HOPES THAT HIS FLOAT PLAN WILL NEVER HAVE TO BE USED FOR RESCUE PURPOSES. STILL, IF YOU EVER NEED ASSISTANCE ON THE WATER, FILING A DETAILED FLOAT PLAN LETS AUTHORITIES INITIATE THE MOST EFFECTIVE SEARCH.

My grandfather taught me a similar lesson about operating a boat. We were puttering along in a 14-footer powered by a 15-horsepower motor. A 16-foot runabout with a 90-horsepower outboard weaved in and out of our wake. My grandfather slowed down. "Let him go," he said. As the runabout pulled alongside, one of its occupants yelled, "Out of the way, old man!"

"Keep driving like that and you won't live to be my age," my grandfather snapped back.

That's good advice that I've always remembered. "Let 'em go," works hand in hand with slowing down before a situation becomes dangerous.

Volumes have been written on the rules of the road. To learn them, consider reading *Piloting, Seamanship & Small Boat Handling*, published by Hearst Marine Books. This book is considered to be one of boating's bibles. You'll find it in many book stores, marine supply stores, mail order companies and libraries. It complements the Commission's *Boating Handbook*, which all

boat registrants receive. Need an extra copy? Contact the Commission Bureau of Boating at the above phone number.

Hands on the wheel

When I bought a center console boat and ran at full throttle, I once held the wheel with one hand and ate a sandwich with the other. Boy, was that a mistake. I was lulled into a sense of control by the smooth ride of a new boat.

A hefty boat wake hit the bow from the starboard side. The sandwich ended up in the water, I grasped the console hand rail with my steering hand so that I wouldn't fall, and the boat surged to port.

No other boats were close enough to be endangered and I was uninjured. I cut the engine fast and regained control instantly, but this piloting incident has always served me well. Now I operate my boat with both hands on the wheel—no exceptions, ever.

Know where you are

Another important piloting lesson I learned almost cost me dearly. I had been drifting among rocks, jigging for small-mouth bass. I wasn't paying attention to the drift. The boat glided firmly onto a submerged boulder. I tried to gun the engine to move the boat off the rock. I tried standing on either end of the boat to nudge the boat clear. Nothing worked.

Luckily, fishing partners in another boat got me off the rock quickly, but the situation could have been very different. The crunching sound of the boat hull lodging on the rock sticks in my mind. What if that rock had torn a hole in the hull?

The lesson I learned was to develop a sixth sense to know where I was all the time on a waterway. The path to developing this sense is learning how to use your electronics skillfully, and studying and interpreting navigation charts and hydrographic maps. It's a matter of becoming familiar with a waterway as quickly as you can. In addition, never become so engrossed in fishing that you forget you are the pilot of a boat.

Aids to navigation

Learning to identify aids to navigation can help you get to know a waterway fast. Know what buoys and daymarks, for instance, show. If you don't know what a mid-channel marker looks like, you can't let it help you pilot your boat.

Chart No. 1 in all National Ocean Service chart catalogs is a 54-page book called *Nautical Chart Symbols and Abbreviations*. Order this excellent reference and study it. The book explains all the hieroglyph-

SMART PILOTING

end of symbols. Study these pages so that you understand the charts better.

Wear your PFD

I've never fallen overboard suddenly and unexpectedly. Of those who have fallen

overboard suddenly and unexpectedly, as many as 80 percent of those who died could have survived had they been wearing a PFD (personal flotation device). Coast Guard statistics and data from Pennsylvania and other state boating regulatory agencies match on this point.

In most boats, having a PFD "in good, serviceable condition and readily available" satisfies the legal requirement. But a lifejacket does little good in an accident unless each victim is wearing one. Tread water in the deep end of a swimming pool

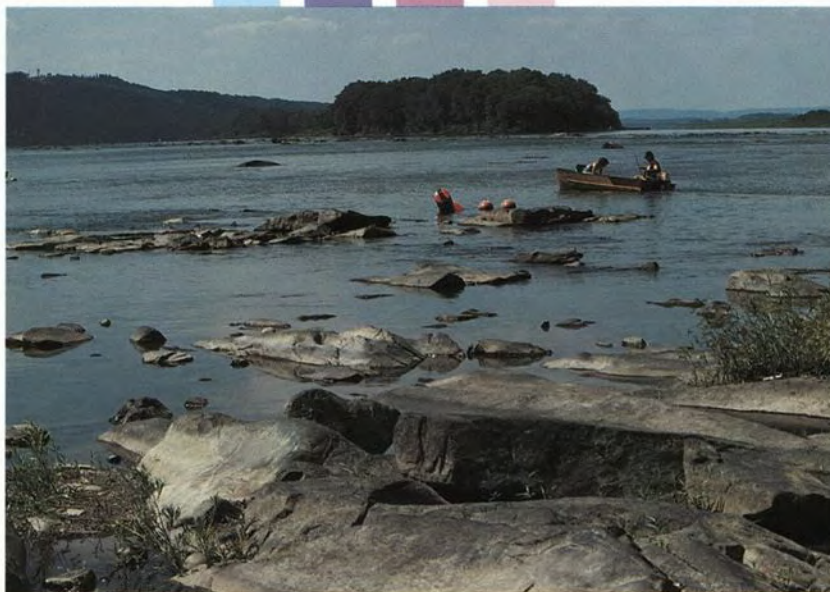
and try to put on a PFD and you'll know what I mean. It's difficult even in ideal conditions. But add wind, currents, waves, cold water and the possibility of other injuries, and donning the device is practically impossible.

The best play: Wear your PFD routinely and insist that everyone aboard your boat wears one.

Electronics

When you play the clarinet or take dancing lessons, sooner or later the teacher will tell you "practice makes perfect." The same advice applies to learning to use your boat's electronics.

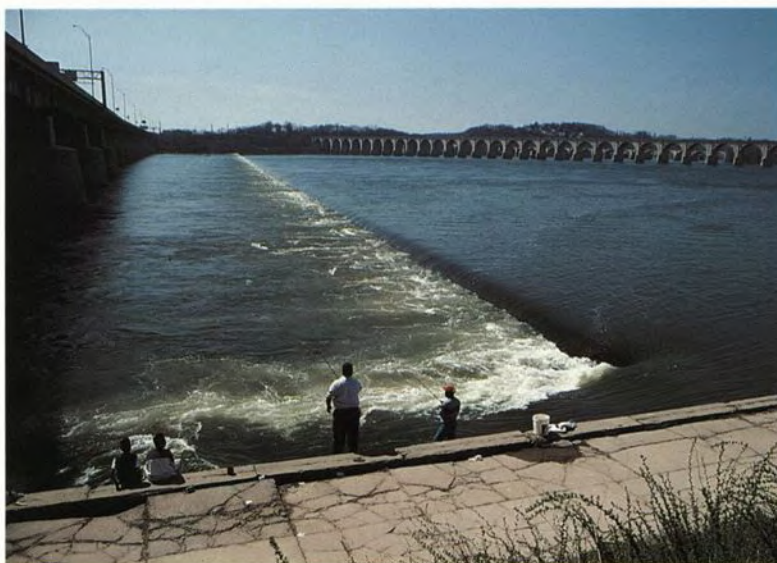
Boaters who have mastered using their VHF radios, loran C units, GPS units, depthsounders and other equipment are more skilled operators than others.



"Watch where you're going" is familiar, but is worth repeating because a large percentage of boating accidents involve collisions with other boats or with stationary objects.

ics you find on navigation charts.

If you boat on the Three Rivers, order the Allegheny River, Monongahela River and Ohio River navigation charts. The second page of each chart book is a leg-



This is the Dock Street Dam, a low-head dam, in Harrisburg. Sadly, it's the site of several fatal boating accidents. There are some 2,000 low-head dams in Pennsylvania. Know their locations on the rivers you frequent.

Keep practicing with your electronics. Study the owners manuals and try new operations. Keep at it. Remember: Practice really does make perfect.

Test your lights, electronics

Thinking about another lesson I learned years ago still scares me. A friend and I launched his boat one bright, sunny afternoon for some shad fishing on the Delaware. After hours of fishing several miles from the access, the outboard coughed, made thick, blue smoke and died. He had run out of gas.

Contaminated gas in one portable tank was the difficulty. A quick refill with fresh gasoline from a gracious boater solved the problem and the engine hummed normally. Even though the sun had set and we knew it would soon be dark, we thought we had lights.

My partner hadn't used his lights all season. The last time he checked them, he admitted, was in the middle of the season before. The lights didn't work.

We lucked out. We motored up to the ramp just about the time most boaters were turning on their lights.

The lesson is simple: Test your lights, and all your electronics, at the beginning of each trip. You never know when you might need them, even though you don't plan to be out at night or in periods of limited visibility. And if your boat uses portable lights, take them with you on all your trips. You never know when you might need them.

File a float plan

This idea goes for every trip. Tell someone responsible where you're going, when you plan to return, and who you're with. If you trailer your boat, leave a description of the trailer and the tow vehicle, with the license plate numbers. Include a detailed description of your boat—size; model; hull material and color; trim colors; engine make, size and color; registration number; and other distinguishing features.

Every boater hopes that his float plan will never have to be used for rescue purposes. Still, if you ever need assistance on the water, filing a detailed float plan lets authorities initiate the most effective search.

Stow gear properly

A fishing friend once learned another valuable lesson after nearly sustaining serious injuries. We had been fishing for several hours with no luck. While motoring

to another spot, we noticed about a dozen boats huddled in an area. We raced there, hungry for whatever action we could find.

Smallmouth bass were the order of the day. The bottom was paved with them and the action was refreshing. The fishing was so good that my partner ripped the crankbait off his line to tie on a jig, but instead of putting the lure away, he placed it on the console.

The plug fell to the deck after a while. No one noticed it rolling around the deck during the heat of battle. My partner set the hook in a fish, but when he stepped back, he put his foot squarely on that plug. It shot out from under his sneakers and down he went, hard, right on his derriere.

Aside from the jokes on how painful it was to sit during the next few days, all of us learned a vital safety lesson. When you use fishing tackle, water skiing gear and other equipment, put it away properly after use. In this way, no loose objects end up under someone's feet.

This idea is especially important on small boats, where space is limited, and when you're on the water with less experienced boaters or with kids. Cultivate the habit of stowing gear properly after use and you can minimize these kinds of accidents.

Getting "out of the hole"

Most boats don't plane parallel to the water right away on acceleration. For a moment, as your boat accelerates to planing speed, the stern rides low in the water and the bow juts upward. The boat planes smoothly and parallel to the water within a few seconds as the boat reaches cruising speed. This is called "getting out of the hole."

During this short time, maintaining a safe lookout is difficult because the bow rides high enough to block your complete view of where you're going. For this reason, many accidents occur at this moment—when a boat accelerates to planing speed and the operator cannot see what's in front of him for a few seconds.

For this reason, keep a sharp lookout just before you "hit it." In this way, you can better ensure that the area is clear in front of you during the danger time.

Operator inattention

Beware the long road home. According to Coast Guard statistics, most boating accidents are caused by operator inattention. When you're tired, the run home is the danger time for boaters. That's when you need to be especially alert. Even

though the maxim may sound overdone and simple, it still applies: Watch where you're going.

I know it's easy to forget this simple idea. I have forgotten it, luckily with no harsh consequences. Boating is exciting, and the sights, sounds and smells on the water are captivating. But when you're negotiating a crowded, difficult access approach, for instance, don't stare at the glistening, hypnotic waves bouncing off another boat's hull or an angler pulling in a huge fish from shore.


Wakes

Remember that as a boater you are responsible for your wake and for any damage your wake might cause. Never hedge on your speed in slow, no-wake areas. These places are usually crowded, and wakes could damage other boats and shoreline property.

One way to handle an overtaking swell, if you can maneuver a large boat, is to put your boat stern into the oncoming surge. The wake then spirals under your boat from stern to bow, after which you can get back to what you were doing.

A cresting overtaking wake could pour over a small boat's transom, swamping the boat. The best way to avoid wake damage in a small boat is to come about and steer quartering into the wake.

Our Pennsylvania waterways are becoming increasingly more crowded. If we don't slow down, enacting stricter speed limits is inevitable.

No one said that boating should be drudgery. Heck, have a ball! But don't learn vital lessons the hard way. While you're boating, adopt good piloting habits so that your safety increases and your boating is more fun. 

OBTAINING NAVIGATION CHARTS

NOAA/NOS navigation charts. Contact: Distribution Branch (N/CG33), National Ocean Service, Riverdale, MD 20737-1199. The phone number is (301) 436-6990. Delaware River charts are listed in Catalog 1. Lake Erie charts are listed in Catalog 4. **Three Rivers Charts.** For the Allegheny River, Monongahela River and Ohio River, contact: U.S. Army Corps of Engineers District, Pittsburgh; William S. Moorhead Federal Building; 1000 Liberty Avenue; Pittsburgh, PA 15222; phone: (412) 644-6872.—JA.

Buying a Used Small Boat:

Cull the Junk from the Gems

by Art Michaels



You could choose to buy a used outboard boat instead of a new boat for several reasons. Your budget may require you to look into buying a used boat instead of a new one, and if you're a first-time boat owner, buying a used rig is a less expensive way to become a boat owner than buying a new one. Seeing exactly what you want in a used rig is also a good reason to consider buying a used boat.

But beware. When it comes to buying a used rig, beauty can be only skin-deep. A "dream rig" could turn out to be a ghoulish nightmare after closer inspection.

Fall is a great time to buy a used boat. Dealers sell the previous year's stock at the greatest savings. Boat owners who want to make a change are ripe for a sweet deal. And boat owners who didn't have the time to use their rigs this season as often as they had hoped are eager to cut their losses.

If you're thinking of buying a used boat, motor and trailer now, you need special know-how to get the most for your money. When you know what to look for as you check out a used rig, your chances of discovering a gem and getting it at a great price increase.

Suppose you know generally the kind of boat, motor

and trailer you want. Here is a wealth of secrets on what to look for when you peruse a used rig. Let these ideas help you get the most for your money.

HIN

First, check the HIN (hull identification number) to verify the boat's model year. On most boats you'll find the HIN on the outside starboard (right) transom. It is often marked on a metal plate on aluminum boats and engraved in the transom of fiberglass boats. The last two numbers in that long jumble of letters and numbers tell you the boat's model year.

If the boat was built in 1972 or thereafter, it has to have a HIN by law. If you know that a boat you're considering was built during or after 1972 and it has no HIN, do not buy the boat. Thieves often remove a boat's HIN to hide that it was stolen and to resell the boat illegally.

Checking the boat's HIN is also important because you want to make sure the model year of the boat is the model year the seller says. Sure, if you look long enough you'll find shifty fast-talkers selling used boats. But more often sellers make honest mistakes in telling you the wrong model

year of a boat. Some sellers just don't know that the HIN identifies a boat's model year, and they have been wrong about it for years. You be smarter and check.

Outboards

Sellers can make honest errors identifying the model year of a motor, too. But in the case of a motor, getting the year right is vital to servicing and maintaining the engine correctly. The model number and serial number of an engine appear on a plate that's located on the motor's clamping bracket or on the swivel bracket. A few manufacturers place this information inside the cowling, so look there if you can't find the numbers on the outside of the motor.

Some manufacturers identify their motor model years by the serial numbers. Others recognize their motor model years by the model numbers. To verify the model year of a motor, check with a dealer who sells that make, and tell him all the numbers you find on the plate. The dealer can then look up the motor's model year.

Hotline help

Call the U.S. Coast Guard Boating Safety Hotline (800-368-5647) to learn if the boat, motor or trailer has been involved in a manufacturer's safety recall. The hotline operator needs to know the manufacturer, model number and serial number for each item. If an item has been involved in a recall and the safety defect has not been corrected, advise the seller so that the seller can arrange for the repairs to be made. Reconsider the equipment after it's been fixed, or consider what needs to be done if you still want the item.

"Blue book" prices

When you know the boat, motor or trailer's correct model year and model number, call a dealer and ask if he'll give you the "blue book" high and low prices for that specific item. Just about every



For a reasonable fee, most dealers will thoroughly inspect a used rig you're considering.



The model number and serial number of an engine appear on a plate (circle) that's located on the motor's clamping bracket or on the swivel bracket. Some manufacturers place this information inside the cowling, so look there if you can't find the numbers on the outside of the motor.

dealer has "blue books"—references published annually by several different companies that list high and low price estimates on boats, motors and trailers. Some libraries have blue books, too.

Some dealers do not quote blue book prices. If you call a dealer who doesn't want to quote blue book prices, you can still get an idea of a fair price. Ask the dealer the price for new models of the equipment you want to buy, and how much older models cost.

Use blue book figures only as estimates. The condition and brand of a boat can change its value. An older engine in mint shape commands a higher price than the blue book estimate. On the other hand, a motor or trailer whose manufacturer is no longer in business might be worth less than the published estimate because parts aren't readily available.

Transom, hull check

When you consider some rigs, especially fiberglass boats, push down firmly on the engine to check for cracks in the transom. You can turn some engines side to side back and forth by moving the engine itself, and other engines can be moved only from the steering wheel. An engine that can be manipulated by turning the motor should move as if you were steering the boat, but otherwise the engine should not move. An engine that moves in other ways suggests that the transom is fractured.

Engines that move only from the steering wheel should be turned that way. If the transom on a boat you're inspecting is cracked, the repair is probably essential but expensive.

Furthermore, check for a soft transom by looking inside the

Buying a Used Small Boat:

Cull the Junk from the Gems

transom under the motor well. The wood there is often covered only by a coat of paint. Probe with an ice pick to see if the wood is soft. Also, look for soft wood under the aluminum plate on top of the transom.

Inspect the lower bow area for hull damage from misjudged moorings and beaching the boat. This kind of fiberglass and aluminum damage can be repaired, but be sure to account for this cost in any offer you'd make on the rig.

Check the rivets on an aluminum hull, especially before and after a test ride, if you have that opportunity. You don't want to buy a boat with leaking or loose rivets.

Inspect the boat's hardware for rust and corrosion, especially on a boat that's used in saltwater. Expect a used rig's hardware to be worn. Hardware on boats used in saltwater deteriorates faster than hardware on boats used in freshwater. Expect to replace worn hardware. In most cases this task isn't difficult or costly.

Drain a small sample of lower unit oil from the outboard engine. A few drops dribbled onto your finger is enough. If the sample is black and smells, it could be burnt, which suggests that the lower unit bearings are burnt. If it's milky, or if it looks like chocolate milk, water has probably contaminated the oil and the prop or drive shaft seals may need to be replaced. Oil that's clear, light brown or black without smelling burnt is probably OK.

Check with a dealer on an oil sample problem before you make an offer on the rig. The dealer might advise you to look elsewhere. The dealer might be able to correct the problem, but you should figure this repair cost into the rig's price.

Getting a guarantee

If you're buying a used rig from a dealer, you probably don't have to test it on the water. You'll most likely get a boat that's been properly repaired and serviced. You should also get a guarantee on the rig for a certain number of days.

You will likely get no such guarantee from individuals, so if you have a choice, check around your area for a dealer with a stellar track record and buy confidently from that dealer. Most dealers are reputable and will work hard to help you get the rig you want at an affordable price.

Service records

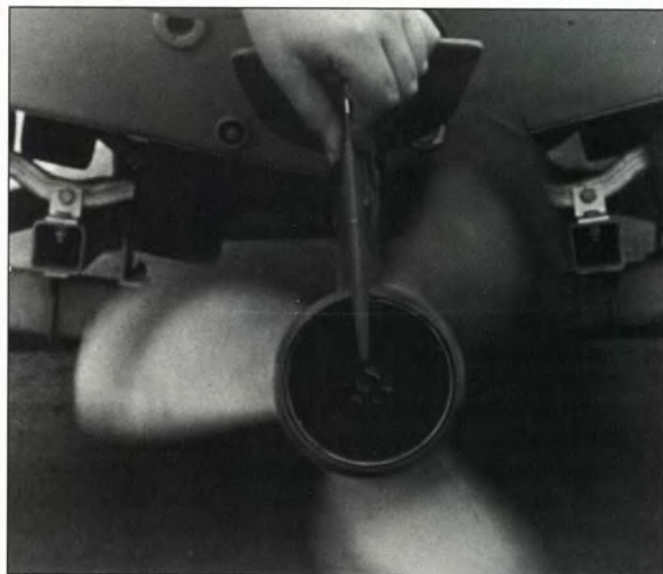
Whether you buy from a dealer or from an individual, find out if service records are available for the rig you're considering. Lots of people go to one dealership to maintain and service their boats, so a dealer may be quite familiar with the rig you're looking over. A glance at the service record can tell you if the rig's been maintained properly and which repairs have been made. It might also reveal that an item's had a history of problems.

If you have your heart set on a rig offered by an individual, ask a reputable dealer to check it before you make an offer. Most dealers will look over a boat thoroughly for a reasonable cost.

Test it on the water?

When you buy a used boat and motor from an individual, test it on the water if you can. Do not test it only in someone's driveway with a hose on the outboard. On the water you can determine things about the boat that you can't know any other way. These

characteristics include handling, maneuverability, full-speed "feel" and your overall impression of the rig and its suitability.



Seeing a wobbly prop is sometimes difficult, so as the prop spins, hold a screwdriver or pen up to the prop shaft at the nut as a frame of reference. The stationary pointed object lets you see the slightest wobble.

Outboards, propellers

Inspect the engine's skeg, the motor's fin-like lowest portion. Visible skeg damage could be minor, but it could suggest that the motor needs more expensive internal repairs. You'll want to check this out by operating the rig on the water.

Check for a bent propeller shaft by shifting the engine into neutral and twirling the propeller a few times with your hand. If the prop wobbles, the shaft is bent. Seeing a wobbly prop is sometimes difficult, so as the prop spins, hold a screwdriver or pencil up to the prop shaft at the nut as a frame of reference. The stationary pointed object lets you see the slightest wobble. If you discover a bent propeller shaft, you may want to look elsewhere because this repair is necessary but expensive.

Look at the propeller, too. If it's dented or bent, it needs to be repaired. The amount and nature of a propeller's damage determine how expensive the repair will be. Generally speaking, propeller repair is less expensive than propeller replacement.

In addition, check to see if the steering works correctly, and if the steering cable, motor cables (throttle and gas) and motor swivel work properly. These items can be fixed or replaced with little difficulty.

Seats, upholstery, flooring

You should also inspect the boat's seats, upholstery and frame wood behind the upholstery. Of course, upholstery shouldn't be torn. However, more important than the outer appearance of the seats is the framing. The seat framing wood should not be rotted and the hinges should be secure. Repairing what you can't see readily here—the frame wood—is much more costly than fixing the obvious—the upholstery.

In addition, walk around the boat's interior floor. Step everywhere. Look for soft spots, which could indicate places where the wood has rotted. You will likely have to repair a rotted deck sooner or later.

Trailers

Trailers deserve special attention, too, because many boats are offered for sale with a trailer. First, make sure the trailer length is appropriate for the boat's length, and that the full trailered load is less than the trailer's gross vehicle weight rating (GVWR).

Verify the GVWR by telling a dealer the trailer's manufacturer name, serial number and model number. The dealer can then confirm the trailer capacity according to the manufacturer. This information usually appears on a trailer frame member.

Look at the trailer's leaf springs. They should curve upward. If they're flat, they probably need to be replaced.

Check the trailer hubs and wheel bearings. One way to test the bearings is to support each trailer axle off the ground and twirl the wheel slowly.

If you hear a grinding noise as the wheel spins, as if someone sprinkled sand in the hub, the bearings may need to be replaced. This repair should include replacing the hub rings and seals.

Another way to check the bearings is to wrap your hand around the wheel hub after trailering for a few miles at highway speed. Cool hubs suggest that the bearings are all right. Warm or hot hubs suggest worn or dry internal parts, or that the retaining nut and cotter pin are too tight.

Asking a dealer to check out the hubs more thoroughly is a good idea if you don't know how to do this yourself. The bearings and other internal hub parts should be inspected. They ought to be well-greased and should show no signs of pitting or corrosion. If the bearings and hubs aren't in top shape, the dealer can fix them, but be sure to figure this cost into the sale price.

Even a trailer that's only a year old or so can have bad bearings. On trailers used in salt water or brackish water, neglected bearings could be damaged in less than a year.

Inspect the overall integrity of the trailer frame. Make sure no part is cracked, especially at welds. Check for rust and corrosion more on the trailer frame's inside angles and undersides than on the smooth outside parts.

Lights, wiring

Check the trailer lights. Make sure they work. In many cases, a bulb simply needs to be replaced. But on some trailers the wiring is shorted, and this means a more costly repair.

Don't worry if the wiring harness on your tow vehicle doesn't match the trailer's harness. Most of these problems are solved easily by adapters.

Rollers, bunks

If you're considering a trailer with rollers, launch the boat at a dock, and with the boat off the trailer, turn the rollers and work the roller arms back and forth. Greased rollers and arms move effortlessly. Poorly maintained rollers and arms have to be lubricated.

If the trailer you're considering has bunks, inspect the carpeting for wear and note places on the bunks where the carpet is coming off. Worn and loose carpeting has to be replaced or resealed.



Tow the boat for a few miles and then feel the trailer tires. Are they warm or hot? Warm tires after trailering a distance are normal. Hot tires hint that they are underinflated or that the trailer is overloaded.

Check the inflation pressure of hot tires. If inflation is correct, the tires may need to be replaced, especially if they've been underinflated or overloaded for thousands of miles and several years of roadwork.

Work the winch, too. It should move freely and be properly lubricated. Unwind the winch rope or cable completely. Is it frayed? Replace a frayed winch rope or cable right away. The winch rope or cable's condition shouldn't affect your decision about a rig because replacing a winch rope or cable is easy and inexpensive. Still, it's vital for safety.

Finally, don't be discouraged in your search for a used rig. Use these ideas as you keep looking. When at last you find the right rig and you plunk down your hard-earned money, own your new investment confidently. You got the best deal for your money.



Accessories, electronics, instrumentation

Check the boat's instrumentation on the water. Make sure the tachometer, speedometer, ammeter and other gauges work properly.

Thoroughly test electronics that are part of the sale package. This equipment often includes VHF radios, depthfinders, stereo systems, loran C units and GPS units. Be sure you also know which accessories are part of the deal and which are not. These items often include the anchor, oars, boat hook, fire extinguisher, horn, personal flotation devices, mooring lines, battery, fenders, portable gas tank, lights and boat cover.

You and the seller should have a list of which accessories and electronics are part of the deal so that neither party misunderstands. Confusion here can make a big difference in how much the package is worth.—AM.

ALLEGHENY HIGHLANDS *page 4*
OVERCOMING PADDLING HAZARDS *page 8*
THREE RIVERS POOL *page 16*
READING A RIVER *page 22*
PILOTING SMARTS *page 24*

