

BOAT

Pennsylvania

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VIEWPOINT

Lake Resources and the Future



John Simmons
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Pennsylvania is blessed with many lakes. The 8,300-acre Lake Raystown is our largest lake, but the vast majority are much smaller. The Pocono Mountains area is particularly renowned for its numerous small lakes. Around the turn of the century, people began to see lakes as places where they could go to get away from the hustle and bustle of city life. Summer communities sprung up around Conneaut Lake, Harveys Lake and Eagles Mere Lake. Cottages with few amenities were built and residents contented themselves sitting on screened back porches, contemplating their peaceful surroundings. In the evening it was not uncommon for lovers young and old alike to row around the lake in their wooden Adirondack boats to talk with each other and their neighbors and to enjoy the peacefulness that water brings to all of us.

In the early years, much of the access to these Chautauqua-like communities was by rail. As better roads were built, more and more people began to travel the long distances to share in the tranquility of lake communities. Additional cottages were built and soon many lakes were surrounded by dwellings. The cottages were so close that access to the lake by a non-property owner could only be gained across someone's lawn. The houses were also becoming year-round residences not just summer retreats.

Today, developers are building on lands far removed from the shoreline but through acquisition of lakeshore property they ensure access to even more people. Lake communities are not what they used to be.

Mass-produced boats and outboard engines have compounded the problem. Some 25 years ago, few could afford or wanted a motor larger than 25hp. Today, outboards are produced up to 235hp and the average of all motors sold is 60hp. Speed seems to be the ideal for many people. They no longer go to the lake to escape from city life, but rather to vent their frustrations through the feelings of power, authority and control and that they get from their boats.

This desire to unwind is understandable, but the effect it has on many of our lakes is that the idyllic situation of time gone by can no longer be attained. Most people who live by lakes have grown to accept this idea as fact. Big, fast boats are here to stay.

When boat operation becomes hazardous to users, however, something must be done to control boating. Every lake has its cowboy or its outsider who seems to disregard all courtesy and good boatsmanship. He operates his boat early in the morning or late at night. He comes too close to fishermen, docks and drifting boats. He roars up the lake and back—and has another beer. These kinds of operators make it difficult for the others who want to use the lake resource sensibly.

What usually happens next is a call for more law enforcement and regulation, such as restrictions on horsepower, speed, hours of operation, types of boat, age of operator and activity. Many lakes have these restrictions now. Many other similar lakes do not. Why? The people who use these lakes show consideration for others. They police themselves. They have established their own operating code of conduct and make sure that everyone observes the rules.

If you live on a development lake facing the problems of growing boating density, you can help. Join the property owners association, become active and form a safe boating committee. Establish some good rules for boating safety and courtesy and educate others of the benefits of these rules. Become aware of the problems and work toward solutions. Don't wait for a tragedy to happen. With a little effort regulation can be avoided and everyone can enjoy the sport safely.

Our lake resource is limited. It is up to all of us to protect it and to ensure its availability to future boaters.

John Simmons

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The cover

Staff photographer Russ Gettig caught water skier Terry Miller zooming around Youghiogheny River Lake. She's having fun, all right, and that's a good point about the Yough River Lake. The waterway offers great fishing and boating potential. For a detailed look at Yough River Lake, please turn to page 29. If sailing is your thing, the articles on pages 4 and 8 may grab you. Water skiers should check out the article that begins on page 24 for a fresh perspective on a unique aspect of the sport. Paddlers picking PFDs is the point on page 26, and protecting your outboard motor prop is the gist of the feature on page 14. Lastly, for a fascinating bit of Pennsylvania history, see page 16.

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Sailing on Lake Arthur

by Thad Bukowski

"It's the best lake in western Pennsylvania for sailing and it may be the best in the Commonwealth." This opinion is expressed by Roger Anderson, race chairman for the Moraine Sailing Club, about Lake Arthur, in Moraine State Park in Butler County.

"I've sailed Lake Michigan and it's easy by comparison. If you learn to sail well on Lake Arthur you should be an accomplished individual at the activity anywhere," says Anderson.

Anderson explained that Lake Arthur's winds change so quickly and that one must learn to adapt just as readily to a variety of currents if he puts canvas on the water. He adds that the terrain surrounding the lake is made up of abruptly rolling hills and valleys. These features create many crosswinds, updrafts and downdrafts, which can become frustrating to a sailor. The west-to-east position of the lake and a broad western valley beyond helps to invite the wind.

"But that's where the fun lies," says Moraine Sailing Club former Commodore Martin Newcomer of Wexford, PA, who delights in such variable situations. He tries to get out on Lake Arthur as a retiree at least three times a week.

"In sailing, it's you and the wind and the desire to see if you can do it, if you can control the situation in going where you want to go. Lake Arthur presents you with many interesting challenges to do better, to learn. If you're racing you're also challenged by asking yourself, 'Can I do it faster than the next guy.'"

Moraine hosts many sailing races and regattas. Though the club under present Commodore Fred Stewart of Zelienople, PA, has 50 members interested in racing, it also has 80 more who are interested in casual sailing and social activities, which are centered at a great cove, designated for sailing activity at Watts Bay along Moraine's north shore.

Watts Bay's launch ramps, pullups, parking space, shelters and picnic facilities are ideal and draw hundreds, perhaps thousands, to the grassy and shady shores every summer Saturday and Sunday. Independent public sailing is becoming more prevalent here and welcomed by the club.





Thad Bukowski



Beginning in early May, five races each during the past year were held on May 3, 9 and 16. Two races each occurred May 23 and 30 and June 6. On June 7, Moraine Sailing Club conducted a Learn to Sail Day, helping the newcomers to the sport, while on June 20 two races were held in conjunction with a Learn to Race event open to the public.

Late in 1987 the north shore Watts Bay area was extended with a special section just adjacent at Barber Point, designated for the sudden rise in the number of wind surfers converging at Lake Arthur.

A Fleet 77 Day Sailor Club, belonging to the Day Sailor's Association, is also active with members from as far as Pittsburgh to Wellsburg, West Virginia.

Club member Henry Rithner says that he comes to Lake Arthur on almost every weekend from West Virginia because "sailing is better organized at Lake Arthur than anywhere else I know, the physical conditions are the best I've found anywhere, the people are unusually friendly and the restrooms are the cleanest anywhere."

The north shore Watts Bay section is located along the widest lake span and has the best winds, sailors report. They include owners of a Flying Scot fleet of large

craft, a Sunfish fleet, and the wind surfers.

Two starting times are held for all races with a club pontoon boat beginning all activity and race stewards well-organized to handle events. Sunfish and day sailors go out first and are followed later by high-performance Flying Scots and Fireballs. All groups race for points and trophies in every division, highlighted by a year-end banquet at which time trophies are presented. Sailing continues on the lake into October and is in such favor because horsepower limits on the lake range under 10.

Cindy Magill, secretary to Mitch Dickerson, Moraine State Park superintendent, reports that sailboat rentals are also available at the Crescent Bay area along the south shore, where pontoon boats may also be rented.

If you bring your own boat, a \$5 park launching permit is required if it is not motorized, but not needed if a Pennsylvania boat registration has previously been obtained. Park permits are available at the main headquarters building along the south shore at the entrance to the parks' Pleasant Valley Day Use Area.

The park opens at 8 a.m. and closes at sunset, except that fishing and boating may continue for 24 hours if no camping gear is evident in the parking accesses.

A special marina for private boats is also located along the north shore and is

open from 6 a.m. to 11 p.m. The park office manages a 102-site dry mooring area for sailboats and sailboat racks for 18 additional boats at Watts Bay. Docking facilities, offshore mooring, dry mooring and canoe sailboard racks are also available at the Davis Hollow Marina, operated by a concessionaire. The waiting list for keeping sailboats at the park is unusually long.

Sailing may be tried anywhere along the many lake sections except near swimming or propagation areas. Upwards of 500 to 700 boats of all types may be on the lake at one time on a busy weekend day or holiday.

Two causeways crossing parts of the lake interfere with some areas that sailors might want to explore, because masts might be too high for clearance. The Rt. 528 bridge opening onto three large eastern bays has a 29-foot clearance along the north side and 35 feet on the south side. The Rt. 422 bridge, which intercepts Portersville Bay, has 9 feet of clearance along the east and 20 feet on the west.

Nevertheless, the lake waters extend for 3,225 acres and constantly shows colorful sailboats plying its waves and tacking against unusual wind currents in a huge array of picturesque motion.

The park around the lake is a recreation seeker's delight with a three-tiered south shore day use area for



picnicking, fishing and swimming in addition to sailing. Both shores have excellent and extensive swimming beaches and change houses and the north shore also has an outstanding macadam bicycle trail, which extends over 7 miles. Bicycle rentals are readily available. If you want to put a sailboat in along the south shore day use area, extensive facilities are also located at nearby Bear Run boat access, which also has extensive trailer parking facilities.

Moraine State Park's 15,000 acres of recreation area are used perhaps more than any other similar park in the Commonwealth. A busy weekend brings over 25,000 folks with summer weekday activity numbering 10,000 daily. The 1987 Memorial Day crowd, for instance, registered in at 64,000!

Sometimes crowds are so great on holidays such as July 4 and Labor Day that the park has to close its gates. Calling park headquarters at 412-368-8811 might be advisable for information if you are traveling from a long distance.

The public is indebted to the Western Pennsylvania Conservancy and Dr. Maurice Goddard of the former Pennsylvania Department of Forests and Waters, whose

combined and untiring efforts during Project 70 and Project 500 days made both the park and the lake feasible. Moraine State Park and its lake were created after reclaiming a vast strip mine, which polluted waters of this spot and Slippery Rock just downstream of Muddy Creek, which flows into and forms Lake Arthur.

Slippery Rocks' companion waters are widely used for whitewater canoeing and excellent trout and smallmouth bass fishing.

As its brochure states, "Moraine State Park is an outstanding example of reclaimed land that had once been desecrated by man." Deep mines were sealed, strip mines backfilled and graded and 422 gas and oil wells were plugged before its creation under the determination of Dr. Goddard.

Dedicated on May 23, 1970, Moraine State Park includes the 3,225-acre lake, which not only has outstanding sailing but produces the greatest number of citation largemouth bass in the state. The 15,000-acre park has a number of interesting nature trails and an Arboretum Trail that leads to the Jennings Nature Preserve, off Rt. 528. Facilities and fishing piers are located for the handicapped throughout Moraine State Park.

More than 1,200 picnic tables are available throughout the park with picnic pavilions and charcoal grills located strategically. The Marina Restaurant along the north shore offers dining with a scenic view of Lake Arthur and its many sailboats. Lifeguards man beaches along both shores from 11 a.m. to 7 p.m. during the summer from the Memorial Day weekend to Labor Day.

Family camping facilities are not available within the park, but nearby campgrounds surround the vast recreation area. These include:

- Lake Arthur Family Campground, R.D. #1, Box 273, Slippery Rock, PA 16057. Phone: 412-794-9901.
- Cooper's Lake Campground, R.D. #2, Slippery Rock, PA 16057. Phone: 412-368-8710.
- Campers Paradise, R.D. #4, Box 473, New Castle, PA 16101. Phone: 412-368-3766.
- Rose Point Park Campground, R.D. #4, Box 410, New Castle, PA 16101. Phone 412-924-2415.
- Bear Run Campground, R.D. #1, Portersville, PA 16051. Phone: 412-368-3564.

RED LIGHTNING



Kenneth Henning

by Paul Jenkins



I flipped the TV channels to the weather station even though I'd heard the forecast a half-dozen times that day. Scattered showers over the lake. But the question was, would they be accompanied by thunder and lightning?

I set my alarm for 5 a.m. but knew the anticipation of sailing across the lake the next day would probably make sleeping hard. Before dawn the next morning I was jarred awake by the rumble of a far-off storm. I rolled out of bed and groped my way toward the bathroom, but as I passed the kitchen—which faces the lake—I froze in my tracks. The sky to the north lit up with a flash of lightning that extended for miles along the horizon. For the next hour I gathered my gear in preparation for a lake cruise that might be canceled before it got started.

When I reached the yacht club, the first light was beginning to outline the heavy gray clouds to the east. The lightning storms had passed and conditions seemed to be improving. Dick Bayer and his grandson, Ed Mattis, greeted me at the front gate and we drove out to Dick's graceful 31-foot sailboat, *Jade*, gently tugging at its mooring near the east breakwall. While loading the boat we talked about the uncertain weather and wondered if the crew of the other boat that was sailing with us would show up.

"Captain Bob is a very experienced skipper," Bayer said, "and I have a lot of faith in his judgment."

Bob's boat is the *Vega*, a sturdy 36-foot catch. "If she doesn't sail, neither do we," Bayer said. The crew of the *Vega* did show up, and after a quick introduction and some talk about the latest weather forecast, we decided to start out. We would keep a close watch on the weather and maintain radio contact.

After leaving the bay and rounding Gull Point we buffeted southwest winds that produced four-foot to five-foot swells and pushed us along at over six knots. On our due north course the seas approached on the stern quarter. Our boat handled the following sea well but an occasional cresting wave would raise *Jade* high and send her rushing headlong down the other side of the wave. The boat was never in danger of broaching but the conditions were more

than enough to keep the helmsman on his toes. For several hours things remained about the same, and we made good progress even though we were sailing on a single sail, which was a self-furling genoa.



About 12 to 14 miles off the point, or about mid-lake, the sky to the west started to darken. Then something unusual happened. The marine radio shrieked with an ear-piercing squeal that lasted several seconds. The familiar voice of the Canadian Coast Guard radio announced a special weather warning. Mariners were asked to switch to channel 21 for more details. Dick was at the wheel so I dashed to adjust the radio. I turned up the volume so that it could be heard on deck and the shrill words of the announcer seemed to cut the heavy air like a knife.

"This is a severe weather warning to all shipping and especially small craft on Lake Erie," said the announcer. "Radar is indicating heavy bands of showers and dangerous lightning in central Lake Erie, just east of Conneaut, Ohio."

As I looked out at Dick I heard a faint rumble of thunder and saw a distant flash of lightning over his left shoulder to the southeast. The sight gave me an eerie feeling. It wasn't just the distant storm that bothered me, it was something I hadn't ever seen. The lightning bolts were heavy and thick, but the worst part was their color. They were bright red. We decided to reef the headsail in case the storm hit us quickly. We were in the center of the lake and past the point of no return. All we could do was get ready for the blow that was bound to come.

About a half-hour later another weather alert came over channel 16. This time we didn't bother changing channels. We could see a row of black clouds heading at us from the west. *Vega*, which had been visible a few miles to the north, had vanished in the haze. We were all alone, and the vale of gray mist and the dark sky were closing in quickly.

Dick asked me to take the wheel while he pulled in the last of the headsail. Before he had it in, the first gust hit and sent *Jade* rolling to starboard. I strained to hold the wheel and tried to pull her into the wind. I yelled for Dick to start the motor. Bottle-cap sized rain drops pelted the deck as the wind went from 15 to 25 mph instantly. The wind caught the tops of the waves and created a stinging spray that engulfed our boat. It was like sailing through a carwash.

I struggled to put on my raincoat but it was really a waste of time. The water was already running down my legs into my shoes. Even with our sails down, the wind was causing the boat to heel sharply to starboard. The knot meter ticked off the numbers, climbing from 6 to over 8 knots and I could hardly hear the diesel motor that was running at over half throttle beneath the cockpit floor.

I yelled to Dick for more engine speed so that we could steer into the wind. He pushed the throttle well forward as I turned the wheel all the way to the left, but nothing happened for what seemed like a very long time. Finally it headed up, and the heavy rolling motion settled into a slightly more comfortable pitching.



Red bolts of lightning flashed to the north, then to the east, and even to the south. The fast-moving squall line was all around us. All we could do was hold on and pray that one of those nasty bolts wouldn't hit our mast. Dick had mentioned that the mast was well-grounded, but another thing he said came to mind when the boat lurched and I bumped the metal backstay directly behind me. He said, "Whatever you do, don't get close to the rigging during a storm."

The rain came down in sheets and the wind blew so hard that at times it seemed to be raining sideways. In the midst of all the noise and whistling wind I felt a growing sense of security and confidence. We had a very good boat under us, and our prayer that the lightning would pass was heard. Being soaked to the skin really wasn't so bad because it was a warm day.

In about 15 or 20 minutes the wind slowed and the rain stopped as quickly as it had started. Dick had a peaceful and almost contented look on his face. He was a funny sight as he sat soaked to the skin with a drop of water dangling from the end of his nose.

"Hey, wouldn't you say the old boat held up pretty well?" Dick said with a grin.

"Yeah, I'd say so," I replied. "That was quite a storm, but what got me was that red lightning. Have you ever seen red lightning before?"

The peaceful look on Dick's face seemed to fade a little as he looked out at the storm clouds that had passed to the east.

"No, I never saw lightning like that, and for that matter, I don't care ever to see it again," he said.

Storing Your Trailer: The Proper Starting Point for Next Season

by Sal Fertitta

Retrieving your boat at the end of the season may bring a touch of melancholia, but it should not cause apprehension about the work required to prepare for winter storage. It really isn't so disagreeable a task if you do two things—think of it as preparation for the next season and follow these proven suggestions for a proper winter lay-up.

Attitude is important because the normal letdown at the end of a season makes it much too easy to let proper care slide into the beginning of the next. And that leads to trailer trouble over the winter, which in turn leads to more work and less fun the following year.

Start by thinking of your trailer as an extension of your boat, not just a storage rack, and you're bound to let some of the TLC you lavish on the former spill over to the latter. Now, having assumed the proper caring attitude, here's how you prepare the trailer for proper winter storage.

Survey

Before you pull the boat out for that final time, survey the entire trailer carefully for signs of wear or weakness. Check for flaking on galvanized coatings; for stress cracks and elongation in aluminum; and for blisters and rust on all painted surfaces. Now is the time to make structural or cosmetic repairs before the boat is hauled. If you've followed reasonable care practices over the year, you should not have momentous repairs now, yet there's always a ding or scrape that deserves attention.

Sand away any sign of rust, re-prime and repaint now. Next season, after the rigors of winter, it will be larger and harder to fix. The same is true of stress cracks; bridge these with metal supports or patches, which, depending on the size and location of the problem, should be welded or riveted in place and then painted with rust-inhibiting paint. Pay particular attention to all bolts and fittings. Check for security and signs of wear at the hull rollers (add grease if needed), winch supports, and

wherever there's a U-bolt that could loosen and slide. Keep in mind that corrosion often begins at holes drilled through the frame, so check all such openings and particularly the mounting brackets for the fenders. The general idea is to crawl all over the trailer to inspect all parts that you can't reach when the boat's in place.

Also, inspect the winch pawl, handle bolt, and cordage. Make sure the first two are not loose or worn and that the cordage is not frayed or weakened. Replace any part of the winch that is overstressed (like that spiky cable), and lightly grease the gears and the latch assembly. Before you hook up to the boat, briefly operate the winch to see if the gears rotate smoothly and to make sure that there's current if it's electric, which will lead you to check the

car battery to make sure it's properly charged and corrosion free . . . right?

Next, check the tires for visible cracks, excessive tread wear, and for proper inflation as marked on the sidewalls. Underinflation causes overheating, which accelerates tire wear and leads to eventual tread separation. Sidewall cracks are a sure sign that this is happening. Put a wrench on the wheel lugs and make sure they're tight and properly seated against the rims. Signs of wear are elongation of lug holes and damaged or stripped threads on the lug bolts—either of which requires replacement of the damaged part.

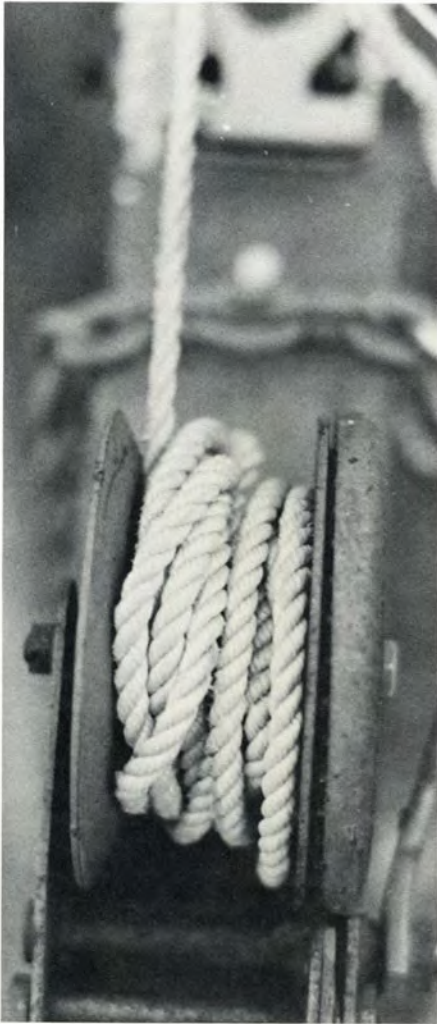
Electrical check

Give the hitch and electrical wires a routine inspection (as you always do) before you hook up, making sure the car hitch is secure, the ball is the proper size and tightly bolted, the jack and tools are on board, and the wire connector adequately mated. Then turn the lights on in every mode. If (as usually happens) one or more lamps fail to operate, try a new bulb in the socket (it's always a good idea to have a few spare bulbs on hand).

If the lamp still doesn't light, buff away corrosion on the contacts and try again. Incidentally, a pencil-shaped gritty type-writer eraser does an excellent job on mild



Rust is a trailer's constant enemy. A little preventive maintenance might have saved these boat trailer fenders. If your trailer is painted, be sure to touch up the paint job as needed. This could add years to the life of your trailer.



The snarled cordage in this winch should be cleared and rewound during storage preparations.

but hard-to-reach corrosion. Continued failure means that you must use a continuity meter to check the circuit for open or shorted wires (the last is rare).

Once electrical conductivity is established, you should remove all the lamps and lightly coat the contacts with petroleum jelly—something you should have been doing all along.

Now, just before you're ready to haul, give the hitch lock a double-check to make sure ball and socket are positively seated. Incidentally, if you don't know the tongue weight of your trailer under its specific load, now's a good time to check it. If you know or can estimate the total weight of boat and trailer together, you can calculate the percentage of total weight at the tongue by using a bathroom scale and pocket calculator. Proper tongue weight is

between 5 percent and 10 percent of the total weight of the rig.

Of course, you are going to give the rig a walk-around inspection once you've hauled to make sure that the boat is drained and properly seated on the rollers and bow chock. But before you roll away, check the safety chains and safety strap. If you suspect any weakness here, secure the rig with alternate lines until you can replace the weak part. It's a good idea to use secondary tie-downs at the bow-eye and at the transom even if there are no problems, particularly if you must travel rough roads.

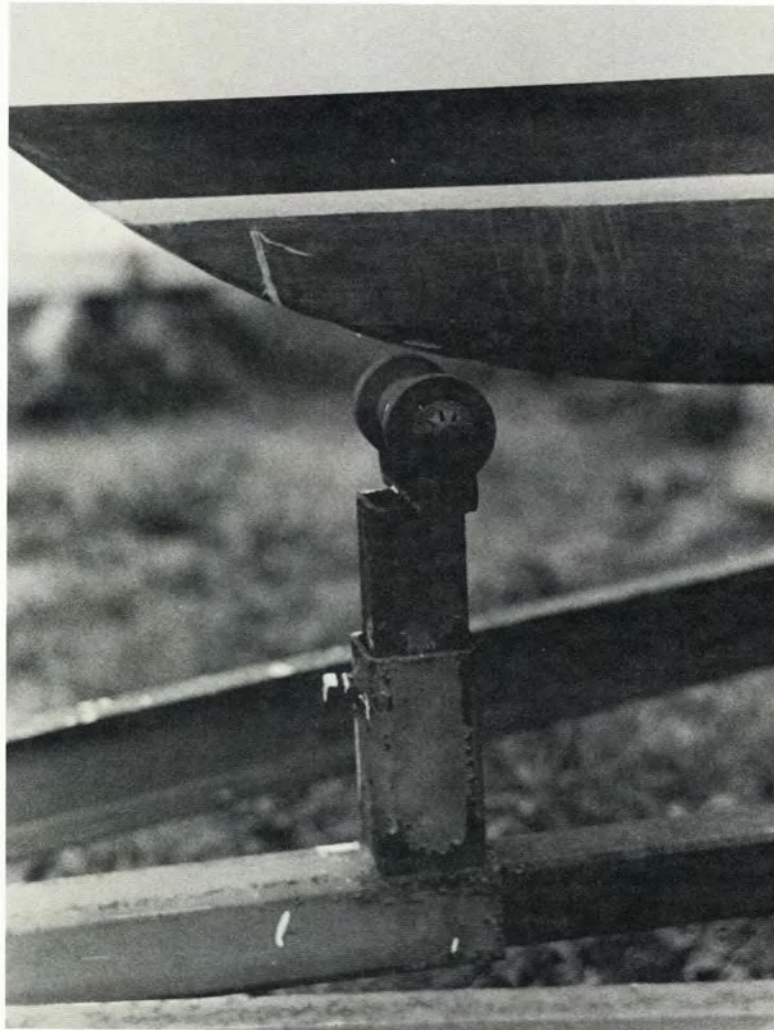
If you've followed the procedures outlined above, many of which could be spread out over several launches as part of your seasonal routine, you're more than halfway to a proper winter storage. All that remains is the final lay-up, which begins with removing all accessory equipment from the boat, washing the rig thoroughly, and optionally (but wisely) adding a coat of protective wax to both. If you choose to wax before storage, don't lay on a thick

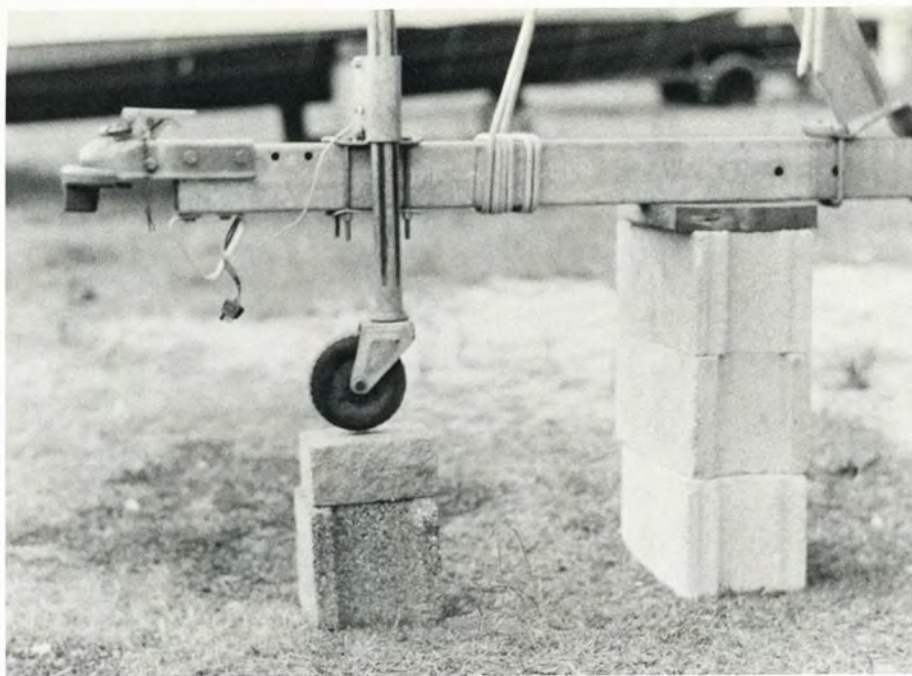
coat thinking you'll get added protection. It's not necessary. Apply a normal coat instead and leave it unbuffed. It's also a good idea to do the washing some place other than where you plan to block your trailer so you don't muddy the ground where you'll soon be crawling around.

Storage places

The best place to store a rig is under roof in a ventilated shed, but failing that luxury opt for the lee of house or garage, close enough for protection against the prevailing wind, yet away from any drainage from roof or gutter. Choose relatively level, firm terrain away from trees and shrubs. Prop or block the tongue, jack the rig slowly (preferably with a scissors jack placed under a scrap of plank and positioned beneath axle, spring shackle, or a

Lack of care in mating the boat to the trailer can result in hull damage. In this case, the bow chock was improperly adjusted.





At left, blocking the trailer tongue at the proper height ensures good drainage during storage.

sturdy cross-member) until the wheels are off the ground, then place blocks under the rear frames of the trailer, and level from side to side with small pieces of wood.


Now, jack up the tongue until you get a slight bow-to-stern angle for adequate drainage (don't forget to pull all drain plugs), and re-block the tongue at this height. You should be able to eyeball the rig and see the drainage angle, but it doesn't have to be steep.

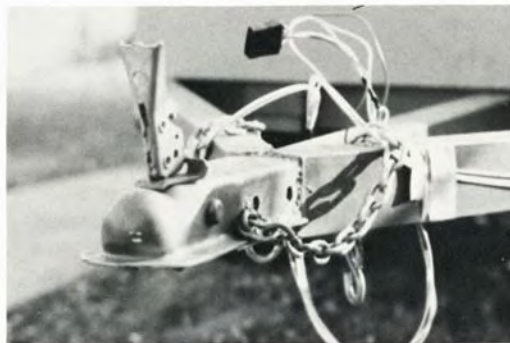
This is the time to pull the wheels, check the bearings for wear and repack (or replace) them. Dislodge debris from the tire treads, clean or repaint the rims, and store them away in the garage. Yes, I know, I know, few people do this, but it's still a good idea!

If you want to leave the wheels on the trailer after checking the bearings, at least rotate them. You'll be surprised how this simple trick evens out tire wear. If you have them, check the bearing protectors (if you don't this is also a good time to add them to your hubs) to make sure each grease fitting is unclogged. If you've been adding a little grease after each immersion (to force out any water that may seep into the hubs), you should find no problems at the hubs.

Check your lamp housings to make sure drain holes are open (you've already checked the sockets), secure any loose wires with ties or tape, and tape over exposed plugs and sockets. Do not cover the lamp housings with plastic because this only encourages condensation. Do, however, cover the winch assembly with plastic or cloth (open at the bottom) to fend off dirt and debris—a must for an electric winch, which usually has a custom cover available from the manufacturer. Another wise investment, particularly if you store your rig in an unprotected area, is a hitch lock for the trailer tongue.

Now, lay on your bows, braces, tarps, and tie-downs. Hopefully, your boat cover is long and wide enough to afford some protection to the trailer as well. But if not, don't worry. You've done the necessary things to preserve the rig through the rigors of winter.

You are almost ready for that distant spring. Almost because there is one more task. Reward yourself for a job well-done. 



At right, check all wires before storage. Make sure they're not worn. Tape them to reduce chafe and to keep them off the ground.



Above, look over your tires. Cracks along the tire's sidewall, as shown here, are a sure sign of fatigue. Time to replace this tire.

KIDS PAGE!

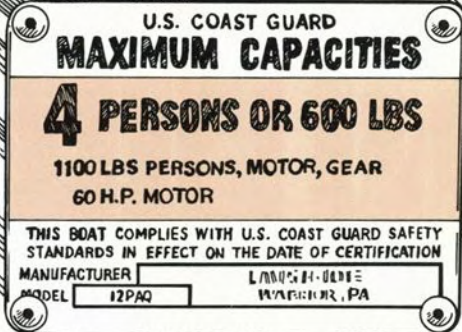
by Steve Ulsh

Capacity Plates

Many people think that boating accidents happen only when two boats collide or when a boat hits something else. Reports from the National Transportation Safety Board show that 90 percent of all boating deaths occur because the victims drown.

There are several reasons why a boater could drown. Some people fall over the side of a boat when they stand up and lose their balance. Some people are reckless in their boats and cause their boats to tip over because they are moving around too much. Some people just don't know how to handle their boats and cause the boat to tip over. Some people end up in the water without planning because they try to carry more people and equipment than their boat can safely handle.

All new boats sold since 1972 are equipped with a capacity plate installed by the manufacturer. Capacity plates give the maximum load and horsepower rating. Pennsylvania law requires that all boats sold or transferred must have a capacity plate—even if the boat was originally bought before 1972. If a boat does not have a capacity plate, a boat owner can get one by writing to the Pennsylvania Fish Commission, Bureau of Boating, P.O. Box 1673, Harrisburg, PA 17105-1673. The only exceptions to capacity plate requirements are sailboats, canoes, kayaks, rubber rafts, pontoon boats and other boats of unusual design. Capacity plates must be placed in a position that is in full view of the boat operator.



If your boat has no capacity plate, or if you are curious about how many people you can bring aboard your boat without creating a dangerous situation, here

is a simple formula that you can use to estimate the number of people your boat will safely carry:

$$\frac{\text{Length} \times \text{Width}}{15}$$

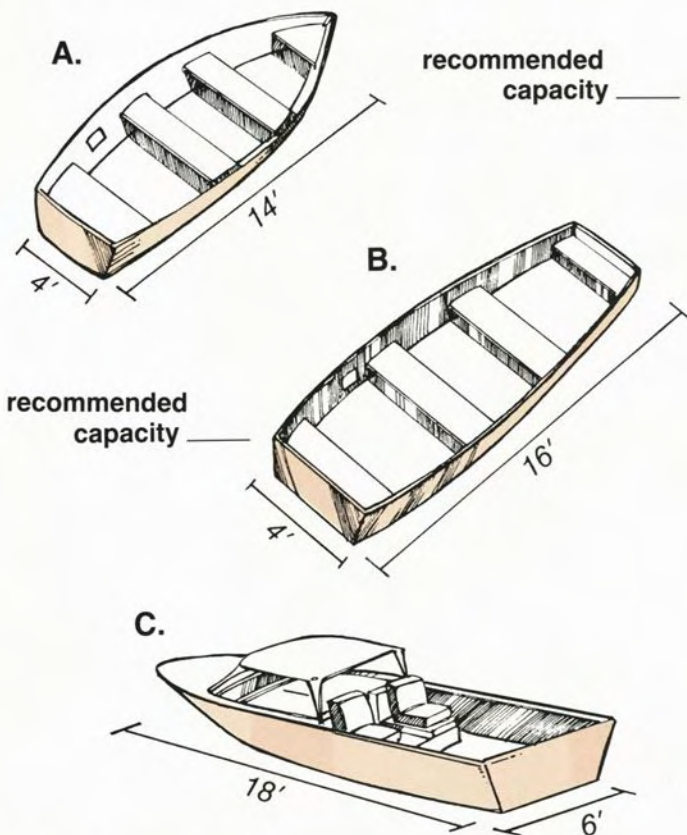
This formula was designed using 150 pounds as the average weight per person. If you have a situation in which you are planning to have adults and small children on the boat, you will have to adjust the formula.

EXAMPLE:

If a john boat is 12 feet long and 4 feet wide, the recommended capacity is 3 people.

$$\frac{12 \times 4}{15} = \frac{48}{15} = 3.2$$

Here are some problems for you to figure out. You will find three different boats. See if you can figure out the estimated capacity load for each boat.



Answers to Capacity Plates

- 3.2 = A
- 4.4 = B
- 5.6 = C

recommended capacity _____

Protect Your Prop

by Art Michaels

photos by the author

Whenever you motor in shallow water, you need to protect your propeller from the damage that hitting underwater obstructions can cause. This need is most important with small-boat anglers whose motors are less than about 15hp, even though some propeller guards are made for engines of much more horsepower.

The problem with prop protection is choosing the right prop guard for your engine and for your boating needs. Generally speaking, you will find forks, cages, and some other new designs on the market.

Forks

A fork is the simplest, least expensive prop guard, but because it's light, don't use one on an engine larger than about 7.5hp. The fork that works best is actually the business end of a dung fork, not a pitchfork. Pitchfork blades are just too wide and heavy for practical use. They interfere too much with the operation of the motor and they're too heavy for stable mounting on low-horsepower engines. A dung fork has thin, round prongs that create only a negligible drag in the water.

Forks are mounted to the lower unit by means of large, screw-tightened bands, just like the hose clamps you have underneath the hood of your car.

Cages

Another kind of prop guard you may want to consider is a cage-like metal attachment. OMC manufactures a prop guard that's about three inches wide from front to back, which encircles the prop. Many marinas and boating supply stores can or-



Cage-like metal protectors are useful on mid-sized engines of the 7.5hp and 9.9hp varieties.

der this guard for you, if they don't stock it. Other suppliers have welders make up batches of cage guards in a variety of sizes for all different kinds of engines. The OMC guard should be fitted only to Evinrude and Johnson engines of either 9.9hp or 15hp.

Medium-light engines in this range are best-suited for these kinds of guards. Forks are a bit too flimsy, and other guards would

be too heavy and would make the engine work too hard.

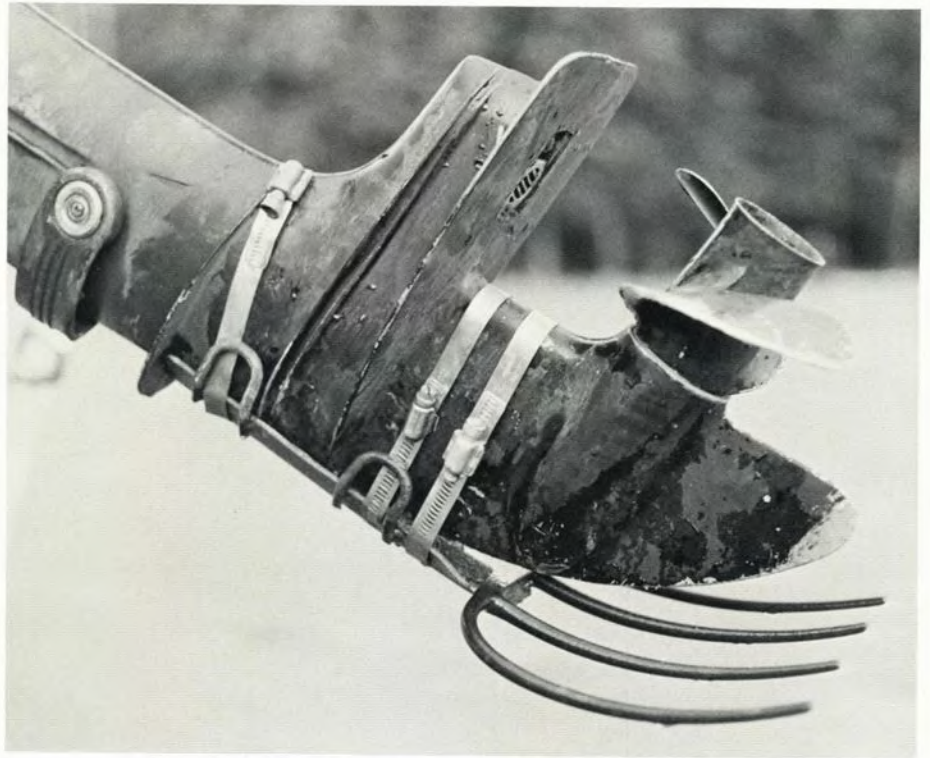
New designs

The last kind of prop guard is a new design that you can find at some marinas and boating supply stores. It's a shaft that mounts to the gear case, from which fins extend from back to front, encompassing the area of the propeller. The device is made of aircraft aluminum, which bends without breaking. This kind of guard is used on motors up to 35hp, so at faster speeds, striking an underwater object mangles the guard but saves the gear case



You'll find new prop guard designs sometimes. This guard is made of aircraft aluminum and protects this high-horsepower engine. On impact, the guard will be destroyed, but it'll save the prop and lower unit.

A fork is a good prop protector on engines of less than about 7.5hp.



and lower engine parts.

In general, all guards cost from about \$25 to about \$50 installed.

Cautions

Prop guards have disadvantages, which you should consider before you buy. First, when the guard is put on, never run the engine in reverse. In rocky, gravelly areas of lakes and rivers, running in reverse might be like hand-grenading your engine's gear case. Both forks and cages can kick up

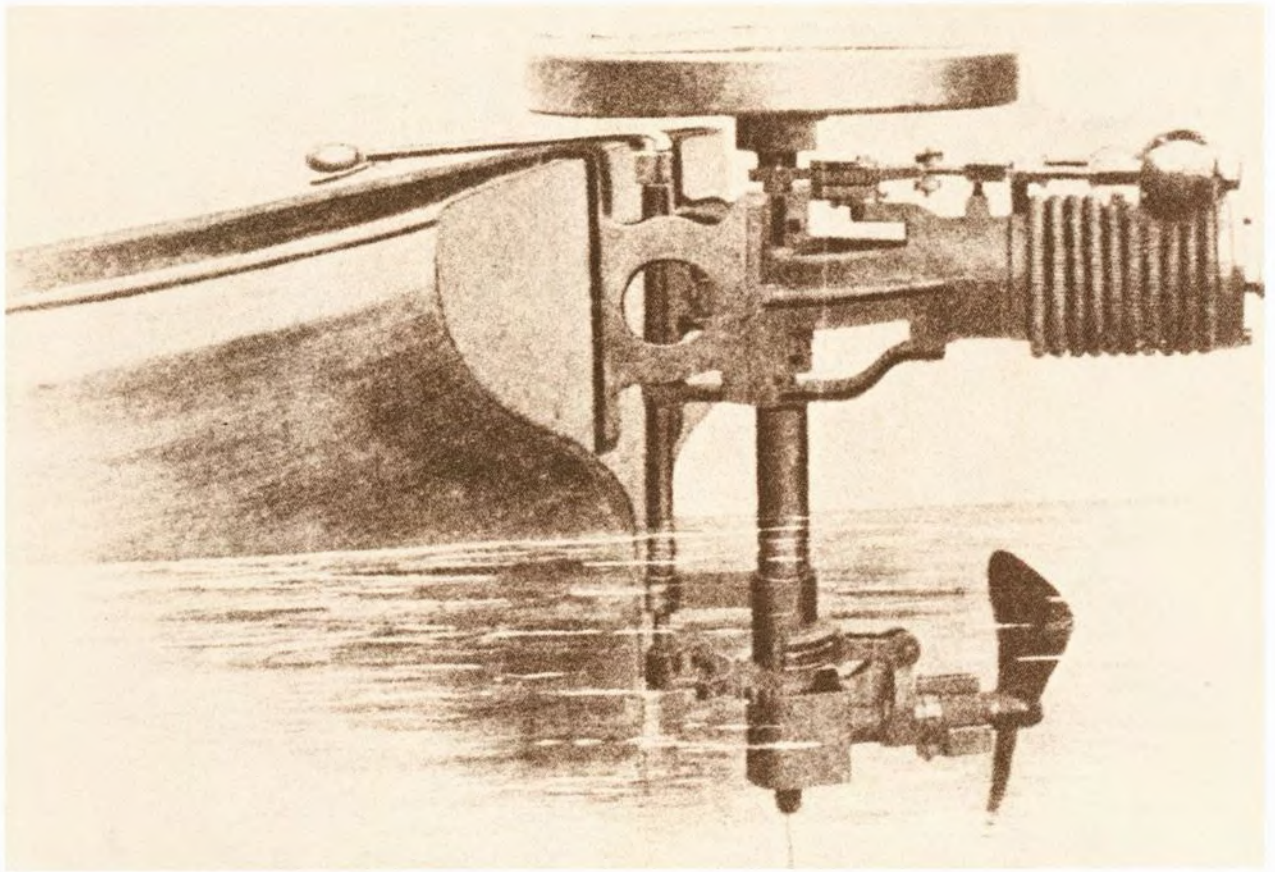
stones in reverse, which are thrown into the prop. The prop then machine-guns the stones into the gear case, causing great damage.

Furthermore, once you mount the prop guard, it's best to leave it there permanently, even though the guard isn't permanently welded to the motor. Taking the guard on and off could limit its ability to protect your engine when you need it—you have to have the guard securely braced to the gear case, and constantly removing

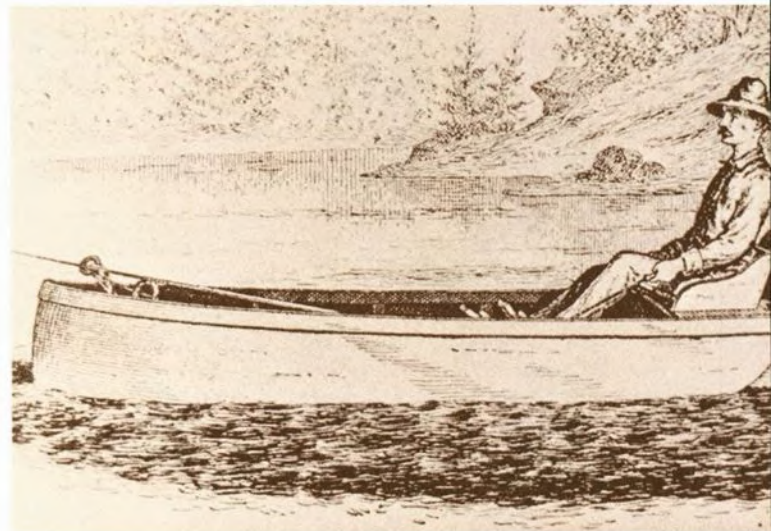
it and putting it back on could weaken the connection.

Do you really need a prop guard? If you boat often in shallow water, and you have an engine from 2hp to about 10hp, you probably do need one. A \$40 investment could pay big dividends when it saves your motor's propeller, drive shaft, and gear case from damage. ▀

The Screw Propeller... Ancestor to the Outboard

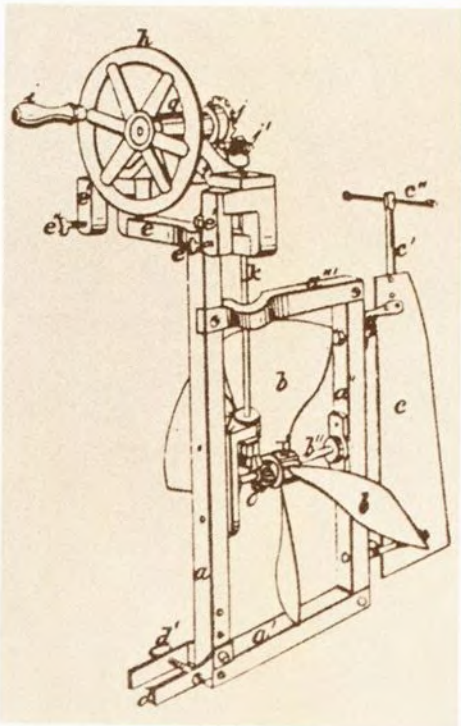


When inventors wrestled with the idea of a horseless carriage, a Pennsylvanian made history with his idea of an oarless boat.



by Richard A. DeBlasio

At the same time inventors were experimenting with the idea of a horseless carriage, a man from Pennsylvania was making history with his idea of an oarless boat. On October 23, 1866, Thomas Reece of Philadelphia patented the first propulsion device of its kind. The "screw propeller," as Reece called it, began an era of outboard motorboating that has been growing steadily ever since.



Above left, first commercially marketed gasoline outboard by American Motors in 1896. Above, Philadelphian

Thomas Reece's outboard design from his U.S. patent. At left, George Tibbles designed this Feather Blade Elliptical Propeller in the late 1800s.



photos provided by the author

Reece's invention looked more like an oversized version of grandma's kitchen handmixer than it did an outboard, but its objective proved otherwise. In his patent application, Reece stated, "... the size of this entire device is to be so constructed as to suit the capacity of the boat to which it is to be applied, it can be stowed away in the latter when not required for use. It is easily put in place, and will need, in most cases, not more than the power of a single man to give propulsion to the boat".

The speed and range of Reece's outboard were determined by how fast and how long a man could turn the crank, which turned gears and drove a propeller. Considering that the average man can develop only about half a horsepower when working at a rate that will not create rapid exhaustion, the speed of Reece's portable outboard would have kept it well below the horsepower restrictions mandated today on many Pennsylvania lakes.

Although there is some debate among historians as to how far Reece's invention ever got during its development phase, it introduced a new concept to boating. The patent specification described terminology familiar to modern boatmen such as flywheel, bevel gears, and propeller, making today's outboard a direct descendent of the screw propeller. The propeller that Reece designed for his outboard is similar to the type used today, but it is doubtful that Reece engineered for a specific pitch; that idea would come years later.

For the next 15 years, the U.S. Patent Office was kept busy processing applications from inventors eager to perfect a boat without oars. Even though many of these new propulsion methods were successful, the inventors may have been overly anxious in their quest. Hastily concentrating efforts on any and every idea to propel a boat, they overlooked Reece's original idea of "portable" power.

One contraption which veered off course was simply called a "propelling apparatus" by its inventor, A. E. Tangen in 1879. A more appropriate name would have been a boatcycle. The driver sat in the middle of the boat and used his feet to pedal a sprocket that turned a drive shaft, and ultimately rotated a screw-like propeller.

Then there was the inventor from New Jersey who developed the "feather blade elliptical propeller." By alternately pumping two push-pedals, two separate paddle

blades rotated in an elliptical cycle. Within each cycle the blades stroked the water and pushed the boat.

A swimming machine was also part of the technological collection of devices that propelled man, boat, or both. A person laid down on a flotation box and turned hand and foot gears. A propeller turned and moved the swimmer. Although the swimming machine was portable, it provided no application for powering a boat.

Foreign inventors also challenged the development of outboard propulsion systems. A Danish inventor went so far as to experiment with a machine that attached to a boat and duplicated the swimming action of a fish tail. Obviously, the idea blundered but managed to attract enough attention to survive the record books. Can you imagine what the fish must have thought?

In 1881, Reece's concept made an encore. Gustave Trouve of France added an electric motor to a design very characteristic of the screw propeller. The motor was powered by batteries and could easily be attached to or detached from the transom of a small boat. Records indicate that Trouve's motor could propel a boat with passengers a little more than three miles per hour.

Meanwhile, back in Pennsylvania, W. W. Griscom was developing a more efficient motor and suggested its application to an outboard. Griscom patented (but never built) an outboard that could incorporate his electric motor. His design also eliminated the rudder by providing the capability of hand turning the entire unit.

Schuylkill River milestone

As the intensity of outboard propulsion development increased, the Schuylkill River was the scene for yet another Pennsylvanian's contribution to the world of row-boat motoring. F. A. La Rouch reduced the weight of his electric outboard in 1884 by using aluminum parts in the motor. Little is known about the specifics of his design, but it was the first outboard to utilize aluminum. La Rouché's motorboat was a familiar sight on the Schuylkill for several years.

The major contributions of Pennsylvania pioneers Reece, Griscom and La Roche to the outboard industry surfaced when the first successful electric outboard was manufactured and marketed in the United States.