

American

WHITE WATER

JOURNAL OF AMERICAN WHITE WATER AFFILIATION



Winter 1957

"OF WILDERNESS WATERWAYS AND THE WAYS OF WHITE WATER"

This Season

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AMERICAN WHITE WATER

Sponsored by
The American White Water Affiliation

CONTENTS

Winter 1957

Volume 2

Number 4

ARTICLES

Hull Design—Part II by Steve Bradley	6
Winter Floating in Missouri by Margaret Hedges	10
Building a Fiberglass Kayak by Dave Stacey	12
Preserving Cruising in the Potomac Basin by James W. Johnston, Jr.	17
Can You Handle a Tipover? by Wolf Bauer	21
Guidebook Committee Report by Jeff Wilhoyte	28

DEPARTMENTS

From Your Editor	2
American White Water Affiliation	3
Letters from Readers	4
Conservation News	15
Magazine Articles	16
New Products	25
Book Reviews	26
Race News	27
Activities	32

EDITOR.....Dave Stacey

Eastern Advertising....Alfred Washington CirculationClyde Jones

Western AdvertisingBruce Grant ArtRoy Kerswill

American WHITE WATER is mailed to all members of the American White Water Affiliation in May, August, November and February. Membership is open to all who are interested in river sport, for the sum of \$2.00 per year.

The magazine welcomes contributions of articles and photographs, but assumes no responsibility for them. Address all editorial and membership material to: Dave Stacey, 601 Baseline Rd., Boulder, Colo.

Printed in the United States of America

COVER—Jack Bartlett, of Waterways Unlimited, working on the mold of their new glass canoe. Photo by Roy Kerswill.

FROM YOUR EDITOR

The last few months have been trying ones for your poor old editor. He was offered and accepted a new job, while still trying to finish an old one at the University. In a few spare moments, he and his harassed staff put out the Fall Issue (more about this later). The new job is that of Technical Director of Ball Brothers Research Corp. This is the outfit from Muncie, Indiana which makes, among other things, the glass jars your mother used for preserving things. The new laboratory will be located in Boulder, with only an hour's drive to a good, wild river. It is pretty much the same type of research as at the University.

The last issue was a bad one for mistakes. We certainly did a good job of making them. For example, the Contents Page refers to the issue as "Fall 1956." And by the calendar, it was the end of Fall. However, there were a few snow storms and things and the cover is labeled "Winter 1956". Please don't blame us too much for cheating you out of a season. We really didn't! To set things straight, this issue is called "Winter 1957." It really is!

On the subject of goofs, we also messed up the picture credits. Somehow a letter giving proper credit became separated from the pictures. We owe (and have sent) an apology to Aubrey Graves of the Washington Post. He took the pictures that appeared with the article, *Potomac River White Water Race*. Also Dan Bradley took the photo of Bob McNair and the flannel board. Sorry.

How did you like Roy Kerswill's Christmas card? I thought it was terrific. Maybe he can get them out sooner next year—some of us had already bought other ones. Drop him a line if you are interested in a card for another year.

Have you missed some copies of White Water? Drop Clyde a line and a new one will be on its way. The fault may be ours—but the Post Office has its troubles, too.

We have one article on safety in this issue, and plan to carry many more. Here is where the Affiliation Safety Committee is rendering a valuable service. All too often safety is determined by whether the boatman is aware of a particular danger. This is a matter of preparation, for during the emergency it is usually too late.

You readers have been more than generous with articles. There are enough on hand for two more issues. So we are printing the ones that seem most appropriate for this time of year. If your labor of love is postponed till next issue, please bear with us. We have only a certain number of pages.

Jeff Wilhoyte and his Committee have labored long and hard on the rating system. Just about everyone in the U. S. has some kind of system (including one your editor worked up for the Colorado White Water Association). The Committee has made its recommendation in this issue. Let's have lots of letters giving your opinion on the subject.

Our magazine is the journal for the American White Water Affiliation, and is sent to all members. Membership is handled on an annual basis, with the May the first of the four quarterly issues for each year. Persons joining in the middle of the year are sent the back copies for that year. We have considered other systems, but are forced to keep to a simple one in order to handle the growing number of members with our volunteer office staff.

Now is the time to renew your annual membership in the American White Water Affiliation. We think we are contributing something to the sport—otherwise so many volunteers wouldn't be working so hard. Please send in your dues, and if possible, bring in a few new members.

Dave Stacey

The American White Water Affiliation

We are many individuals who wish to promote river touring, and to keep informed about wilderness waterways and the ways of white water.

We are an affiliation of outdoor groups, outing associations, canoe clubs, ski clubs, hiking groups, all interested in river touring for our members. Our groups range from the Appalachian Mountain Club in Boston, to the Washington Foldboat Club in Seattle. These groups have pioneered in developing river know-how. They are the local sources from which flow the currents tributary to our growing sport. Through group representatives, the knowledge of all is made available to all.

We are a non-profit organization. Our organizational simplicity permits all dues to go directly to the building of our magazine and services.

OUR PURPOSE

To encourage exploration and enjoyment of wilderness waterways; to foster research, development, and teaching of improved techniques and equipment designs for safely negotiating white water; to protect the wilderness character of our waterways for the growing number who are discovering the rewards awaiting the river tourist.

OUR PUBLICATION

All members receive our quarterly magazine "American WHITE WATER," which is a voice for all American boatmen. You are urged to contribute articles, pictures, cartoons, information and ideas (ideas to increase the fun of our sport and ideas for improving our services to you).

MEMBERSHIP

Membership is on an annual basis with the new year starting in March.

Tell your friends who might enjoy canoeing or canyoneering about the AWWA. Their \$2.00 will help foster enjoyment of wilderness water and bring each into the boating fraternity through the pages of American WHITE WATER magazine.

COUNT ME IN

as a member of the American White Water Affiliation. I understand that as a member I will receive four issues of American WHITE WATER magazine. Here is my \$2.00. My address is.



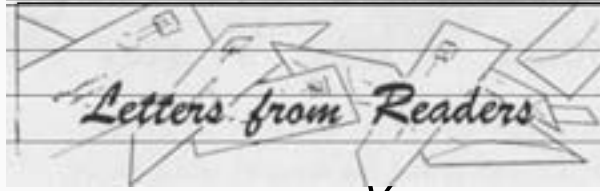
Type of boat preferred: _____

Boating club membership: _____

Suggested articles: _____

(OVER)

Mail to: American White Water Affiliation, 601 Baseline Rd., Boulder, Colo.



AWW appreciates your many kind letters. Because of space limitations, only parts of a few letters can be printed here. They are chosen to give an idea of what we receive.

THE AMERICAN NATIONAL
RED CROSS

NATIONAL HEADQUARTERS
WASHINGTON 13, D. C.

May 17, 1956

Dear Sirs:

Thanks for sending me the back copies of the Journal at the time you took my membership in the American White Water Affiliation.

I have noted with real interest the fact that safety problems related to fast water canoeing and wilderness cruises are receiving the proper amount of attention in your magazine. Naturally, this is of very real interest to the Red Cross which has tried to keep abreast of this expanding field in relation to its own water safety program. I want to congratulate you on the fine job that's being done by your organization, for I know how difficult it must have been to get a project of this sort under way and what real burdens must have been carried by a few of your leaders. I am sure that one important result of your work will be to open up for the use of many people, areas of our country which would go unseen

without the stimulation that you have given to the sport.

While it is understandable why very little attention has been given to the opportunities that exist for fast water cruising and wilderness cruises in certain parts of the East and South, I think you should know that in a quiet way much is going on in these sections, particularly in North Carolina, Virginia, and West Virginia, where there are some beautiful areas drained by some fast dropping rivers which are navigable. I believe that Harold Leich of Washington, D.C., has been in touch with you, and thought perhaps you would like to have a copy of a reprint I had done of an article he wrote for the Trail Club here.

The best of luck to you in your work.
Sincerely,
Ramone S. Eaton
Vice President

1613 - 46th Ave. SW
Seattle 16, Washington
November 26, 1956

Dear Sirs:

I thought you might be interested in

THE PERFECT GIFT FOR OUTDOORSMEN

A gift membership in the AWWA is an excellent remembrance for any sportsman. Surprise a friend with four issues of American WHITE WATER. His or her first issue will contain a card announcing your gift . . . do it today.

As a member of the American White Water Affiliation you automatically have a guiding hand in this magazine. Your suggestions and comments are important. Write in your ideas now . . . we want them all.

(OVER)

Letters From Readers (Continued)

how the use of "White Water Prams" has begun to increase.

I am Assistant Advisor of Explorer Post 280. The post calls itself the "Skookum Chuck Post." "Skookum Chuck" means, loosely, "white water" in Chinook Jargon, the language used by the Indians over a large area of the Pacific Northwest.

A year ago the members of the post were shown the slides and movies taken by Don and Jack Wimpress and me on our trip down the Rogue. They were immediately interested in white water boating.

As a result, we started construction of 12 prams late in January, 1956. We built the same pram that Don Wimpress has used on the San Juan, Kern, Rogue, and other rivers. It is the "Sabot"—available from Rudder Publishing Co. We had 4 of them usable for rowing practice on Memorial Day and the whole bunch ready for our first river—the Snoqualmie—on July 4. The total cost of each boat was \$35, including decks, oars, and life jackets.

While the boat construction was going on, we had weekly swimming practice. The requirement was made that we all had to be able to swim 100 yards before being allowed to put a boat into a river. Then, late in the spring we had a couple of lectures. Jack Fuller told us about the characteristics of rivers and what any boater has to know, regardless of the type of craft. Jack Wimpress gave us a lot of his know-how on handling prams in particular.

After 3 practice sessions on lakes, we started to learn to handle the boats in rivers. Our season's activities included trips on the Snoqualmie, Skvkomish, Stillaguamish, Yakima, and Sauk rivers—with a total of 7 different stretches of river.

Next year we plan to take part in the annual McKenzie River White Water Parade. Our big expedition will be a 6 day trip on the Rogue. Before and after these will be numerous trips on local rivers.

Presently, we are starting construction on our second group of boats. This group numbers 7 and is for our new explorers

who are interested in becoming river rats.

As far as Scouting is concerned, we believe we have something new started. We have not heard of any group of Boy Scouts or Explorers taking up white water boating where each of them learns to handle his own boat. The boys of explorer age—14 and older—take to it readily, and learn fast.

Please accept my wishes for your continued success. I await each issue of American White Water with great anticipation.

Walt Prevost

Corona Courts
Hedley, B.C.

Dear Sirs:

Doug and I were quite active in regattas and fast water canoeing in Province of Quebec. This was about twenty years ago, but think he is still interested in the sport. At any rate I feel he would appreciate the magazine.

Am sending along some snaps of a recent trip made by my wife Lil and myself some time ago. Believe we are the first ones to make this trip. Horseshoe Bay to Squamish (by salt water), Squamish to Pemberton (by railway), Pemberton, south to Lillovet Lake into Harrison River to Harrison Lake. Out of Harrison Lake to Fraser River and down to Vancouver.

This is a 250 mile round trip.

Would appreciate hearing from any Pacific northwest member contemplating trips in R.C. Would be glad to join them as I am alone in this part of the country. Werner Rupp being the closest member.

My thanks to the staff. Keep up the good work.

Melvin D. Price

White Water received Christmas cards from its friends all over the world. We had no trouble reading the ones in English, French and German. However, the ones from Italy, Czechoslovakia, and Yugoslavia gave us a bit of trouble. Many thanks for all of them.

Hull Design – Part Two

by STEVE BRADLEY

Illustrated by the Author

Continuing an illustrated tour of the world of boat design.

IN the previous section, after a general discussion of certain aspects of hull design, I took a specific problem: the designing of hull number one. You will recall that it was to be a two-seater kayak fifteen feet long, a pleasure kayak, easily maneuverable and stable in rough water. It would be shorter than the conventional two-seater folding kayak, and it would have "rocker" in its keel profile. At the estimated load waterline the bow and stern would be slightly out of water, an obvious way to reduce their resistance to quick turning.

Normal procedure calls for laying out the profile or side view of the hull free hand, to scale. The profile would be the exposed section if you ran a knife, held vertically, right down the center from bow to stern. The next step was the consideration of the cross section taken at the point of greatest beam. What sort of section should my hull have?

Ultimate performance would depend heavily upon my selection of the shape of the section below and above the waterline. In pure form, hull sections fall into three categories: the flat bottom, the V-bottom, and the round or U-shaped bottom. Since the pure form is seldom seen I knew my hull would be an adaptation of several of the basic shapes, possibly a sort of pot-pourri of them all, combined in what I hoped would be a harmonious relationship.

Basically, would my hull be flat-bottomed? Conventional planked row-boats are flat bottomed. A rowboat displaces water over a large flat surface and, therefore is extremely shallow draught, an asset if you expect to run your kayak in shallow streams or in rivers at low water. A flat bottom also imparts the feeling of stability, or lack of tippiness. And the desired feature of maneuverability would be present.

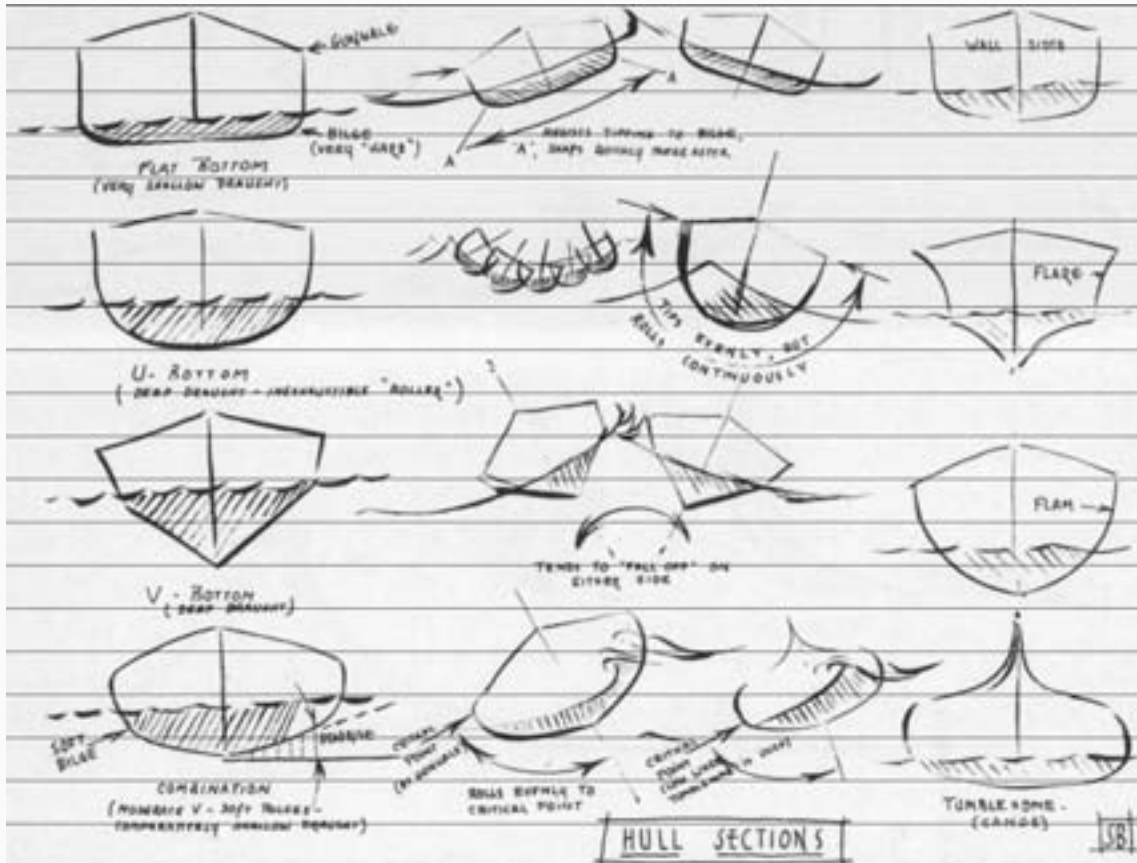
On the other hand a flat bottom has

inherent liabilities. Surface drag increases rapidly with acceleration giving the hull low maximum speed unless unlimited horse power is applied. A broad flat bottom would imply "hard bilges," a sharpness at the point where the bottom joins the sides of a hull. Though initially giving the impression of stability a kayak with hard bilges could be quite unstable in rough water. It would strongly resist tipping until the hull were rolled up on its sides; then it would snap over quickly, all the way.

A U-shaped bottom would have deeper draught, but soft bilges. It would have less drag, but its greater displacement would make it harder to turn. Perhaps its most common fault is its sea-sickening tendency to roll. If you sneeze the hull will roll all day. In such a kayak there would be no rest. Between shots of Dramamine you would be continuously paddle bracing to keep on an even keel.

In somewhat the same way a V-bottom will seem tippy. Few boats, if any, have an absolute V. A modified example is the New England fishing dory. Even here we find a narrow flat bottom with high V shaped sides. The dory was designed for service with the Grand Banks cod fishing fleet. Like any V hull it will lay over on its sides with almost no effort. This made it easy for the fisherman to haul in his heavy nets, or equally heavy cod lines. Superb as a specialized hull the dory is something less than superb as a recreation row boat.

A kayak with a pronounced V bottom would draw too much water; it would be tippy, easily falling off on either side; and it would be difficult to maneuver. Yet some V would allow softer bilges. After the initial tipping it would roll evenly on its sides all the way to the critical point giving the occupants a full opportunity to adjust balance and paddles accordingly.

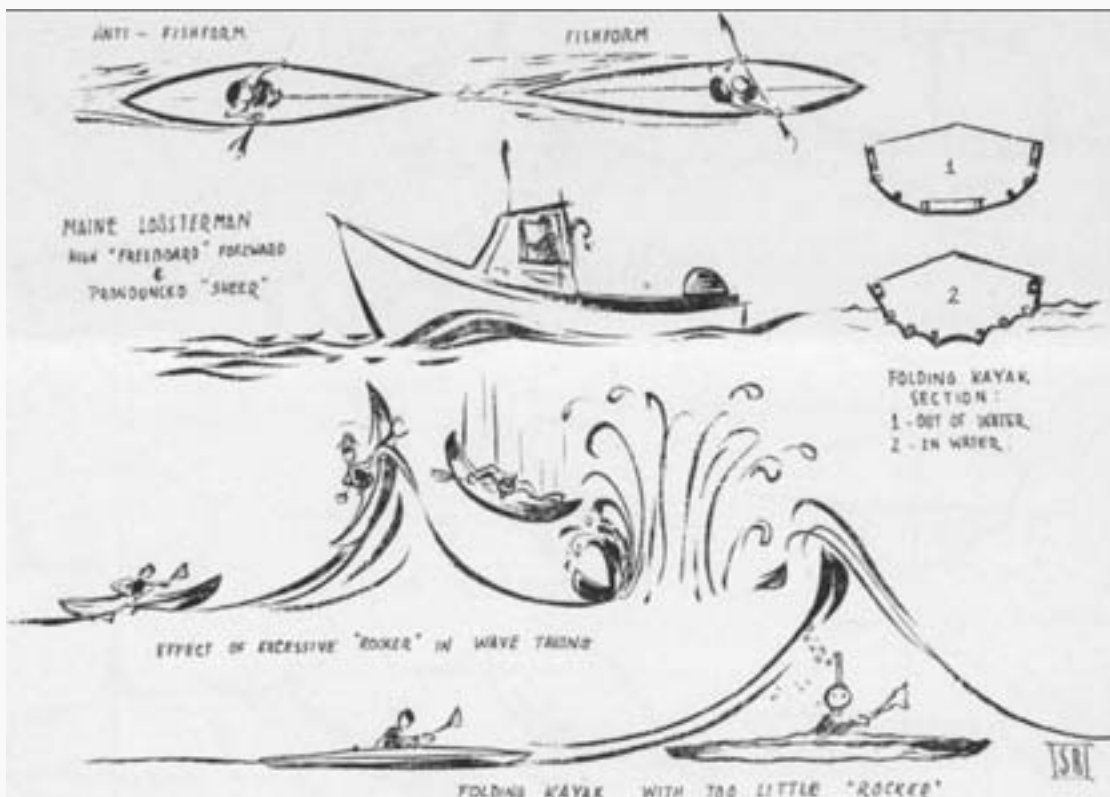


The solution implied the selection of features of all three types. How much of each would be a matter of judgment. I would use a modest V to the bottom, possibly a "deadrise" of about three inches to the turn of the bilge. I would achieve some increase in directional stability over the absolute flat bottom, would not increase the draught enough to militate against the hull's use in shallow water, and I could soften the turning of the bilge. A slight outward flaring of the sides above water would also help.

Above water the sides would be essentially straight to the gunwales, the point where side and deck meet. I ruled out any use of "tumblehome," the inward rolling of the sides so commonly seen in the mid-section of a canoe. Tumblehome, though quite acceptable in a high sided cargo carrying canoe, could be a disadvantage in a low slung kayak. It would lower the critical point where, after con-

tinuous resistance to tipping, the hull reaches a point where it snaps completely over. In a recreation two-seater it seemed wise to keep that point as high as possible, a principle to which I have adhered in succeeding models.

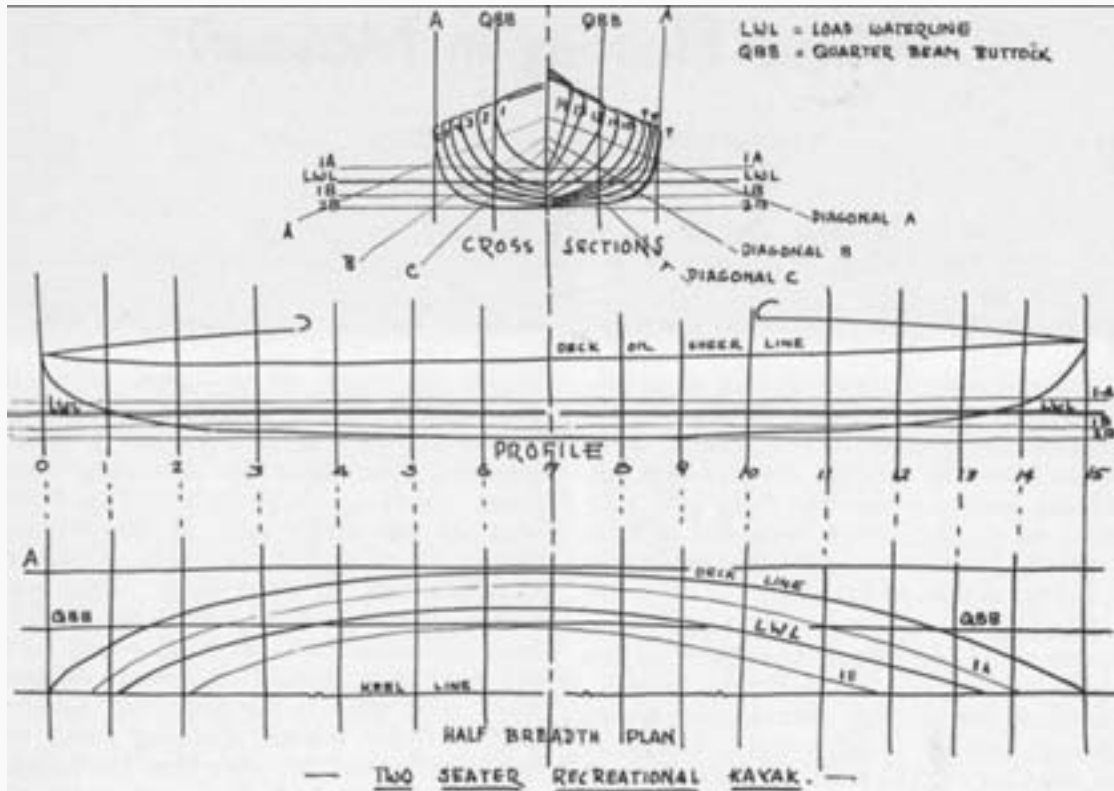
With the cross section of my hull at its point of greatest beam roughed-in I turned to the deck. A high peaked deck would give maximum cargo stowage fore and aft, in watertight compartments, and would also shed water quickly to each side. The force of a wave pounding on the deck would be more effectively dissipated on a high crown than on a flat one. Curling side waves would have less grip; less chance to be capsized. The only height limitation would be the requirement that the occupants sit on the bottom and have ample room above-board for paddling. I was now ready for the third, and equally important phase: the "lines" in plan view.



In plan you are looking down upon your hull ~~form~~ above. The only immediately visible line will be the shape of the hull at the deck line. Unlike canoes, kayaks are seldom symmetrical fore and aft. In plan view their point of greatest beam either falls in front of the mid-section or aft of the mid-section. The former is known as "fishform," and the latter "anti-fishform." In a recreational hull I greatly prefer the latter with the greatest beam aft of the middle. Knowing the exact location and extent of your point of greatest beam, you sketch in the deck line. In your profile drawing you will have entered various waterlines above and below the load waterline. In plan these waterlines will appear like contour lines on a map, the exposed sections you would have if you sliced your hull with a horizontal instrument, each slice taken along one of the waterlines.

Now the mysterious process begins to make sense. We have a profile, a deck plan, and one mid-section. With exacting care these must be transferred to a drawing board, to the scale you select. The three views are inseparably related.

The slightest correction on one automatically leads to adjustments on the other two. The profile, for example, will show the waterlines. In vertical lines it will also show the location of the hull sections. In the case of my two-seater these were conveniently placed at one foot intervals. On the same sheet, preferably above the profile, the area for the sections will be laid out showing the position of the waterlines, and the buttocks. Since both sides of a hull section are symmetrical it is customary to show only half a section. The half section is further divided in halves by a vertical line known as the quarter beam buttock. If necessary the halves are further divided. The exact location of the buttocks is transferred to the plan, known as the half-breadth plan, since again we need consider only half of the plan, its other half being symmetrical. The half-breadth plan will show the lines for the buttocks as seen in the cross section, and the exact location of the sections as seen in the profile. Thus we have an exact system of plotting a curvilinear form on flat paper.



Steve Bradley

This condensation is largely technical and threatens to be dull; but it is nothing to the full lay-out chore. To the impatient it is a strenuous process. In the above capsule I have avoided mentioning the other essentials of hull lay-out such as the plotting of the diagonals as a further check against inaccuracies or faulty curves. Nor have I mentioned the methods for locating the center of gravity and center of buoyancy (possibly because I do not clearly understand the process anyway).

Nevertheless, by following the procedures I completed my design and was ready for the full scale lay-up, and the construction of the mold over which the fibreglas and plastic would be laid. At this point your White Water Editor and I joined forces. The mold was constructed in several weeks. We were ready to turn out the first model. I shall spare you a full description of the aggravations,

the frustrations, and the exasperating difficulties of using the fibreglas and plastic medium for the first time. It is perhaps the stickiest, itchiest material ever devised by the satanic side of ingenious man. If the final product were not so amazing in its strength, lightness, and resistance to impact, none but mad men would use it.

In another of this series I shall discuss the testing of the first hull and our findings, which led us to a second and a third attempt at perfecting a design.

* * *

TIME TO KENNEW YOUR MEMBERSHIP

It's that time of year again. Show your support of the organization and its magazine by slipping a couple of bucks in the enclosed envelope. Bring in some more members, and we can afford more and better service to you.

Winter Floating in Missouri

by MARGARET HEDGES

In the Ozarks, winter doesn't end it all.

THE Ozark region of Missouri is unique in many ways. Perhaps, at this season of the year, the one feature we appreciate most is the fact that our spring fed streams are free of ice all winter long. When many of you the country over are making plans for that last fling with your boat, we in the Ozark area are looking forward to what we consider to be the best float season of all.

Floating in the late fall and winter has many advantages that perhaps are not visible to the arm chair floater with his hand on the nearby thermostat. Oddly enough, the one feature that is the greatest drawing card to winter floaters appears to be the one thing that most fair weather floaters fear the most—the weather. Ozark winters are seldom severe and although the night time temperatures occasionally get near zero, for the most part the winter days are mild. In direct contrast to this, Ozark summers are hot with the thermometer frequently hovering near 100. Summer nights are much cooler on the river than in the city, but still not cool enough to enjoy a campfire. Thunderstorms and flash floods are not uncommon in the summer months and often a well planned float trip must be cancelled because of muddy water or dangerous water levels. The streams do not fluctuate so severely in the winter and as a rule you can count on plenty of water to carry you over the shoals. At no other season of the year are the rivers so crystal clear and the wonders of nature revealed in the stream bed so fascinating as the winter wonders of the Ozark hills.

To many who enjoy our rivers in summertime, the luxuriant growth of trees, ferns and wild flowers provide the perfect backdrop for taking kodachromes. Yes, if summertime has any advantage I must admit that this is it. To watch nature unfold her beauty from spring into

summer and to see her mature with a heavy, deep green foliage is undeniably a thrill. But what of the same scene in the winter? These same sycamores that in summer cast their shade for your enjoyment, now stand like towering white giants guarding the peaceful valley. Many who see our rivers only in the summer time do not realize the work of nature that is hidden by the foliage. Giant rock outcroppings, graceful overhanging cliffs, huge balanced rocks and numerous caves are concealed behind the skirts of summer. And what in summer can compare with a frosty winter morning when the fog is heavy and the hoar frost has formed on every rock and twig and every bit of grass? And when in summer did mother nature ever take the time to coat the earth with silver as she is prone to do in this country that lies in what we call the ice belt (too warm to snow but too cold to rain)? Truly, the scenery of winter surpasses that of summer.

Under Winter Skies



Margaret Hedges

American WHITE WATER



And of the countless joys of winter floats we must not fail to mention those insect free evenings around the camp fire. Nor must we overlook the long nights sleep, deep sleep that comes when you are huddled in a down filled bag; nor the true pleasure of that really hot cup of coffee that warms you through and through on a cold winter morning. And for those who seek the wilderness for its loneliness and peace, winter can bring it in great measure. For there are so very few that appreciate a river in the winter-time.



TECHNICAL LETTER

(Reprinted from the Yoedler—sent in by Dick Tnber)

Dear Editor:

The favorable comment¹ elicited by my report on Sclinorkel, the Official Retriever of the Flea Creek White Water Wading Club, encourages me to pass on a new development.² For some time our members have noted that when they are afloat on Flea Creek in their coracles³ and happen to strike a rock, swimmer, watermelon, or similar hazard, they turn over, or, to use the nautical term, **capsize**.

Not only is it fatiguing to paddle from this position,⁴ but one misses much of the scenery.⁵ So the question arises, what **next?** Basically, the CMFCWWWC⁶ has two choices. He may remain as he is? or he may emerge from his seat and rise to the surface.¹⁰ The latter seems preferable. However, certain members, due to the snugness with which they fit their boats,¹¹ find, at the crucial moment,¹² that the laws of physics are too much for them.¹³ For cases like this, we have developed¹⁴ the Flea Creek Automatic Release. This apparatus is guaranteed to eject¹⁵ the stoutest paddler. One must be cautious, however, not to release full blast over a muddy bottom.¹⁶ Before we learned this lesson we lost three members on a single trip, so deeply embedded as to be permanent members of the creekscape.¹⁷

Trusting that the experiences of our enterprising group are of use to all.

K. Haspar Feep,
Secretary & Commodore
GMFCWWWC.

¹Quiet in the back, please.

²One of many, let me say.

³Light travelers turn more and more to water wings.

⁴This puts a new aspect on the situation.

⁵Try it sometime.

⁶Especially if the water is murky.

What next, indeed!

⁸Capsized Members of the Flea Creek White Water Wading Club.

⁹Where there is very little future in it.

¹⁰Having suddenly remembered a previous engagement.

¹¹We're treading on delicate ground here (or water?).

¹²After all, their heads are scraping bottom.

¹³Ever pull a cork with your teeth?

With the help of the Little Giant Blasting Powder Corp.

¹⁵Or in technical language, flush.

¹⁶Of the river, that is.

¹⁷We find them useful, however, as a slalom course.

Building a Fiberglass Kayak

by DAVE STACEY

Want to build a boat of glass? Here are some considerations.

DURING the past six years, Steve Bradley and I have built and used a number of glass and plastic kayaks. For those who are interested in doing the same, here are some ideas based on our experience. It is better to stick with generalities in this article, for the details on this subject would fill a small book.

Let's look first at the design. You can copy one of the foldboats (use it as a mold too) or you can design your own. Steve read several books on marine engineering and then spent several hundred hours working up the first model (a double). After two of these had been in use for several years, he spent more hundreds of hours on the "Colorado" (a single). After this, another year's work produced the "Rogue". You have to know exactly what happens as you vary things like shear, tumblehome and deadrise. Then it is a matter of making intuitive compromise to get what is wanted. If you just sketch a design without knowing what's doing, the chances are that you will be disappointed in the resulting performance. It makes a lot of sense to swipe a design from a boat whose performance is known.

If you use a foldboat as a design, you can use the boat as a mold. And here is where you can get a drastic improvement over the original. The rubber hull bows in between the longerons. This may make little difference while going straight in smooth water. If the boat is rolling, the sidewise motion of the water sets up turbulence at each of the corrugations.

Another factor is that the corrugations of a rubber hull all act like small keels. With a smooth hull, you will be surprised how much faster you can turn.

Let's say that you have a design. The next step is a mold. This is because the glass, when saturated with plastic, is limp and floppy. You have to work it against something. It took us about 500 man hours to build a mold. We took the draw-

ings and made bulkheads of the correct shape at one foot intervals. Then we nailed lath lengthwise to form the contours. The high spots were planed down and the low ones filled with plaster. Over this went a layer of glass cloth, saturated with plastic (polyester resin). This was sanded and then given a finish coat of plastic. It's an awful lot of work, but the mold can be used many times.

For the beginner, it is much smarter to use a foldboat as a mold. The hull should be covered with plaster or some such material so that a perfect surface can be obtained under the weight of the glass and plastic.

To keep the boat from sticking to the mold, a release agent must be used. There must be no pin holes or scratches, which means that the mold should not be handled after the release agent is applied. Even with the best agent, the hull must be pried a little. It will not slide. For this operation, a handy tool is a hand saw with the teeth ground off. Of the various parting agents we prefer polyvinyl alcohol. You can see pinholes, for it is deep blue in color. You can remove it easily, as it is soluble in water. (For glueing operations the agent must be removed—by sanding if necessary). Other less convenient parting agents are lacquers, wax paper, saranwrap and cellophane. It is hard to keep the last two from wrinkling.

When a collapsible mold is used, you can lay up the hull, then turn it over and lay up the deck. Then you can pull the mold out of the cockpit opening. With a rigid mold, things are harder. We lay up a hull, lay up a deck separately and then glue them together with the plastic. The two pieces separately are quite floppy, and it is quite a problem to jig them properly for glueing. Along the overlap, drill holes every 3" while still on the mold. Then use No. 8 sheet-metal screws.

Now let's look at our material. Glass

The Colorado and Dave Stacey in the Arkansas Race



Hay Studio, Salida

comes in cloth and matte. There is a special surface treatment needed for use with plastic and only this should be used. The cloth comes in various weaves and weights. The strength is governed by both. Some weaves are more resistant to fraying than others. Matte consists of random fibers, held together by a trace of cement that dissolves in the plastic. While fairly rigid when dry, the matte when wetted with plastic becomes completely loose.

Because there are so many different cloths and mattes available, a specific recommendation would be useless. We have found that the following combination will stand years of constant rock slamming. The center layer is matte weighing 2 oz. per sq. ft. On either side is a layer of cloth, weight 7.3 oz. per sq. ft.

The plastic (polyester resin) binds the glass fibers into the shape you want. Because nine-tenths of the strength comes from the glass, excess resin merely increased the weight and cost. There is a bewildering situation in the choice of which plastic to use. Probably any plastic from a reputable dealer will do the job,

but we have had trouble with two different suppliers. In one case, the catalyst was faulty. In the other, the resin (selectron 5779) was specifically designed to have an extra hard surface. Later coats of resin would peel off. In this case, the local retailer just didn't know enough about plastics to warn us.

There is no easy answer. Perhaps the best thing is to write lots of letters. When you have picked a supplier, find out whose product he sells and write the engineering department of the company for a specific recommendation.

To lay up a hull, we have the mold inverted on a rack that keeps it at waist level. First we put on a layer of cloth and trim it for about three inches overlap of the gunwale, then a layer of matte, and another layer of cloth, all trimmed the same way. Slits are needed at the bow and stern.

Some people tell you to build the hull layer by layer or to put plastic on the mold before the first layer of cloth. We used to but found that it is better from all points of view to work dry and then put plastic on in one operation.

All plastics come with information on how to use them. It is well to lay up a sample patch about one foot square, paying close attention to release agents, bubble removal technique and time of cure. Note that the time of cure depends drastically on the temperature of the surface, as well as the amount of catalyst used. Keep careful track of both of these and don't trust the directions. (We used to use sun curing resins, but they seemed to attract an overcast). Go through a dress rehearsal in your mind, down to the last detail, for the plastic won't wait. When you are ready, mix the plastic, half a gallon at a time and saturate the bottom one area at a time. It takes several minutes for the plastic to diffuse through the three layers, so just spend your time making sure that it is evenly spread. When saturated, the layers will become almost transparent and you can see the mold and the air bubbles. The latter are bound to happen and can be removed quite easily. With a squeegee work the bubbles (and excess plastic) from the keel down to the gunwale. It is well to have two or three people at first, so that the operation goes rapidly. For our boats, we set the plastic to gel at 3 hours and have things pretty well finished in an hour.

When the resin starts to gel, you are through working the material! However, in a few minutes, the partially cured layer can be trimmed easily with a sharp knife. This should be done, for it is easy then; and a lot of work when completely cured. Then it is necessary to saw or sand.

For your first boat it is well to leave the cockpit as a separate operation from making the deck. With experience it can be made at the same time. A good form is a length of 2" diameter flexible exhaust pipe, formed to shape and wrapped with strips of glass and plastic filled. The round cross-section is ideal for a cockpit coaming. We often get away without a spray-cover when conventional boats would be quickly swamped. The shape is also ideal for use with a spray cover, using elastic to keep it on.

Bulkheads can be made by laying up a plate and fitting it into place. Then

it is glued in, using a strip of cloth as a fillet. These bulkheads can have doors built into them. They add weight, but are handy for both storage and flotation.

The finishing of these boats depends upon how much time you want to spend. The surface that was against the mold is an accurate copy of the mold. The outside is moderately smooth and really doesn't need any smoothing. However, for a professional look, sanding and a finish coat of plastic is needed. For color, there doesn't seem to be any really good way to get it in the plastic. Our trials gave nothing but trouble. I had very good success painting the deck of my "Colorado." I used a good (car) synthetic enamel and just before applying it, wiped the surface with acetone. This makes the surface tacky and gave a perfect bond.

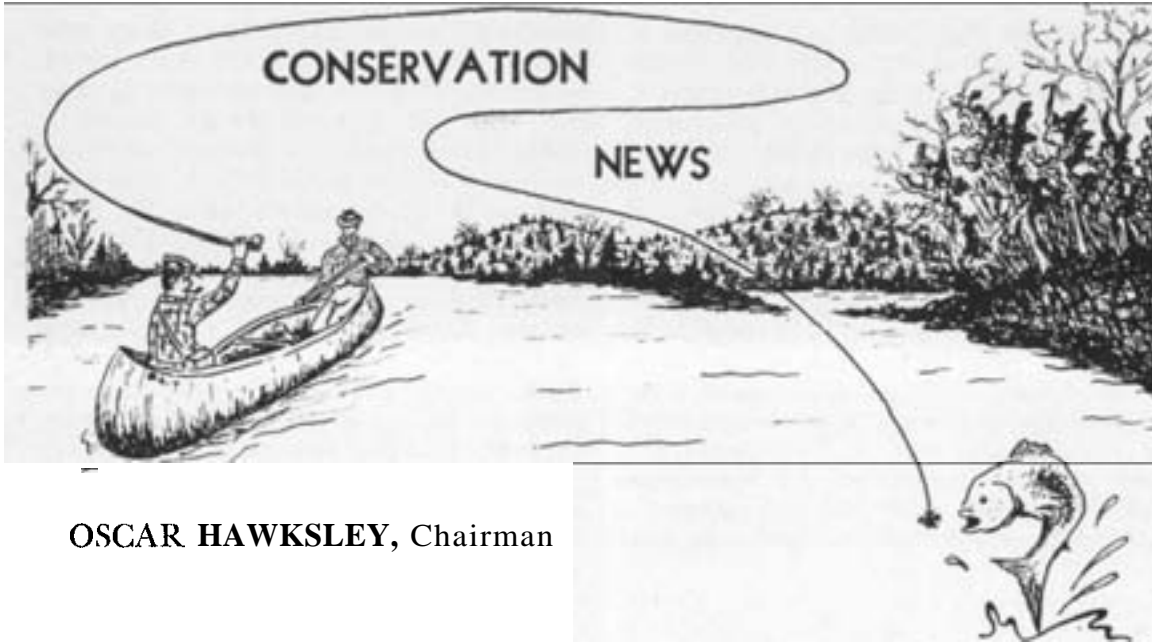
There is not much to the care and repair of these boats. Being impervious to sun and rain, we merely leave them outside year around. After a couple of years you usually have quite an accumulation of scratches on the bottom. To get rid of them, you sand down to the cloth, and put on a coat of plastic. At the bow waterline the two sides ~~meet~~ together in a sharp V. If you hit a rock squarely and hard (it threw Jim Smith half out of the cockpit) the glass is unable to flex, and a small leak may develop. Repair is made by sanding out the damaged glass, and laying in a new layer or two.

This has been a brief outline of the method of making a fiberglass kayak. While the process is essentially easy, there are ~~lots~~ of little things that can cause a lot of trouble. So, if you do build a glass boat, proceed carefully and slowly. It's worth the effort. If you do it right, you will have a wonderful boat.



Change of Address

When you move, please drop us a card. Otherwise your magazine bounces back to us for re mailing. Furthermore, the new address scribbled on the returned envelope may be wrong. So please—let us know.



OSCAR HAWKSLEY, Chairman

THE Conservation Committee of AWWA has been in action since August, 1956. From this issue on, a page of conservation news items will be a regular part of the magazine.

Present members of the Conservation Committee are: Oscar Hawksley, Chairman, Dan Bradley, Marjorie Kelso, Harold Kiehm and Edward D. Hurley. A number of these persons have conservation jobs in other outing organizations. This is intentional, since AWWA wishes to coordinate its conservation effort with the efforts of like minded organizations.

In November, the American Canoe Association passed a constitutional amendment which elevated its Conservation Committee from a mere fact finding group to the status of a full-fledged national activity committee authorized to speak and act for the Association on conservation matters. This adds another good sized voice to the conservation chorus.

One of the most important conservation issues which will come up during the 85th Congress will be the Wilderness Bill. This bill was introduced in both houses in the 84th Congress by Senator Hubert H. Humphrey and Representative John P. Saylor with strong bi-partisan sponsorship, but was too late for hearings and action in that Congress. The purpose of the bill is "to establish on public lands

of the United States a National Wilderness Preservation System." This includes the establishment of a wilderness preservation policy and the creation of a National Wilderness Preservation Council. All AWWA affiliated clubs have been mailed copies of the Humphrey and Saylor speeches from the Congressional Record. Letters from individual members and from clubs should begin to flow to your representatives in Congress *now*, to assure the passage of this bill. Don't leave it to chance (or even to your local conservation chairman)! Individual letters are very important, so do your part.

During the 1956 Christmas holiday season, many of us were busy in an attempt to preserve the old Chesapeake and Ohio Canal and adjacent riverside woodlands for quiet recreational and historical purposes. The question is one of whether the George Washington Memorial Parkway shall be placed at river level, within "beer can range" of the National Parks property, or whether it be placed atop the bluffs where the traffic sounds would not disturb the area. It is still not too late to write to Interior Secretary Fred A. Seaton and to your senators objecting to the former route. They must be convinced that conservationists from every part of the United States are concerned about this mistake in basic policy which

the National Park Service is about to allow, and that it is *not merely a local matter*. If the National Wilderness Preservation Council were already established, this mistake might have been prevented in an earlier stage.

Elsewhere in this number of WHITE WATER is an article by Dr. James Johnston on conservation issues which will effect cruising in the Potomac Basin. He refers to the proposed "Cacapon Wild Riverway"—one of the best natural areas in the Basin and only a 2½ hour drive from Washington—which can be preserved as a wilderness area if *the people* will take action. Passage of the Wilderness Rill should also assist with this project.

An item of interest, to those who boat

in the canyon country and to those who plan a western vacation for this summer, is the status of boating in Glen Canyon this year. We have had word from one reliable source that Glen Canyon was closed to boat traffic as of November, 1956 since there will be no egress from the river below Hite, Utah. This is difficult to understand because the only operation under way at the damsite is the blasting of the diversion channel. We are still seeking more information. The last word from Georgie White was that she still plans to make a trip through this section in July, so there may be a way. In any case, if Glen Canyon, in its primeval state, is on your boating agenda, better make it this year!

PUBLICATIONS OF STATE AGENCIES

Many of the state governments put out interesting and informative booklets on canoeing and white water activities in their regions. American White Water will report on these as they are called to the editor's attention.

Canoe Trails of Michigan is available from the Michigan Tourist Council, Stevens T. Mason Building, Lansing, Michigan. This fifty-five page booklet has a good general section on canoe cruising and detailed information on various river trips within the state. For example, the section on the AuSable River covers two and one half pages and tells about the water conditions and camping, as well as other items of interest. The State of Michigan is to be congratulated on this booklet. It is hoped that other states will follow their lead.

Adirondack Canoe Routes by William G. Howard, is available from the Conservation Department of the State of New York, Albany, New York. It was published in 1920 and could stand being brought up-to-date. Perhaps some of our New York members may be able to influence the Conservation Department to do this.

Wisconsin Water Trails by C. L. Coon, is about the best thing we have seen in years. You have to pay 50c per copy to the Wisconsin Conservation Department, Madison, Wisconsin. However, if you are

interested in Wisconsin, it is worth every cent. It contains about ninety-six pages, with many beautiful illustrations. In fact, A.W.W.A. has asked to reprint some. There is a section on water technique, on camping, equipment, clothes, and cooking. Then there are over 50 river trips, complete with maps. Mr. Coon is to be congratulated on the beautiful job and a copious supply of information. If only other states would do as well by their rivers.



Magazine Articles

Exit the Gunnison, by Robert Evans, Colorado Outdoors, Jan., 1957, (about the plans of the Reclamation Bureau).

The Fantastic Explorer, by Don Dwiggins, Man's World, March 1956 (about Powell's exploration of the Colorado River).

Ordeal by Canoe, by George G. Siposs, Saturday Evening Post, Sept. 1, 1956 (about Michigan's annual 240 mile canoe race).

They Tame the Wildest Water, by M. Durrance, Cavalier, Dec., 1956 (about the Arkansas Race, by an AWWA member and good friend).

Preserving Cruising in the Potomac Basin

by JAMES W. JOHNSTON, JR.

Conservation is everybody's battle.

The Potomac River and its many charming tributaries hold much current and historic interest for those who enjoy river cruising, angling, and camping in wild, natural areas. The 1955 annual meeting of the Interstate Commission on the Potomac River Basin emphasized these great natural assets against the background of life during this restless, perplexing Twentieth Century. We may ponder the disturbing question "Can recreationists preserve enough of these natural assets in perpetuity with the current explosive population growth of the Washington Metropolitan Area?" Lest this brief, and necessarily hasty, comment be another pleasantry, it is essential for us to visualize the natural conditions in relation to developmental economic trends!

At that meeting of responsible professionals, the official spokesman for the Army Corps of Engineers stated that the Potomac Basin is unique as it is the only major one without an authorized improvement plan. They are currently working on such a plan and will undoubtedly recommend several large impoundments on the main-stem and several tributaries. The decision of how many and where is very complicated and difficult because the Nation's Capital will need a larger and more dependable water supply for domestic use and pollution control. Edward A. Ackerman, Director of the Water Resources Program for Resources of the Future forecast a population of 4,800,000 in 25 more years, instead of the present 1,800,000. The Nation's Capital will continue to have two thirds of the Basin's population and hence will have a profound influence on the needs for development and the character of that development. This specialist stated that Washington and its region "can use all the electric power which is likely to be economically developed in

the Basin. It has an interest in the health and the intensity of the valley's agriculture. Its rising land values will make flood control more important. It will need a much larger water supply than at present, perhaps larger than anything contemplated at this time. It has a real stake in the adequate development of outdoor recreation facilities and better access to them."

The irony of the way these developers argue for recreational values is in that they aver that large artificial impoundments will increase recreational opportunity when as a matter of simple, observable fact, there is plenty of slack water in the Basin now. The stretch above the Great Falls of the Potomac to Harper's Ferry, at the confluence of the Potomac and Shenandoah Rivers, is largely slack water. This stretch, and many others, as well as the brackish estuary which begins within the District of Columbia, is inhabited by many hundreds of noisy, outboard skiff operators. There is much current propaganda for a River Bend Dam 2 miles above Great Falls which would have a maximum pool length of about 60 miles, and which would wipe out a significant portion of the historic Chesapeake and Ohio Canal. This fine historic feature of our National Park System is used by naturalists, hikers, anglers, and cyclists. There is much agriculturally valuable bottom land that would be inundated. It might even obliterate the sportiest rapids in the Basin—the Shenandoah's "Staircase" and the Potomac's "Needles" down to White Horse Rapid at Sandy Hook. These are adjacent to Harper's Ferry National Monument.

The "Needles" is a section of more than a mile where the river flows rapidly over a long series of vertical sandstone outcroppings. During the average stage,

the channel is rather tortuous and it tests the cruisers' skill at "reading the water" and negotiating the sharp curves and cross-currents. This cruising contrasts with the boulder-dodging of New England's streams where the water deepens somewhat as it flows faster between large boulders. The brink of a sandstone "step" shallows and will scrape the stern if one's estimate of depth is not quick and sound. During a fairly high stage, the "Needles" presents large, "Whooshing" standing waves that impart a thrilling up-and-down motion to the canoe, especially at the bowl. The "Staircase" is similar in character, but longer and hazardous during the high stage. It was sometimes alluded to as the "Graveyard of the Longboats" during the Eighteenth Century, when precious cargoes of furs, grains, and tobacco were transported to Alexandria and Georgetown for the trading with English sea-captains.

On December 3, 1956, a spokesman for the Potomac Electric Power Company warned a Maryland State Legislative Committee that the proposed River Bend Dam would be a potential threat to the safety of the Washington Metropolitan Area. "It would be well to consider the effects of an 80 foot wall of water which could be released if this dam were destroyed by enemy action." This power company operates steam electric generators which are good consumers of West Virginia's coal. This is the Mountain State, where "the roof-top of the Allegheny Mountains sends rivers cascading in all directions" according to Harold H. Leich. Leich is an intrepid, widely travelled river cruiser and conservationist. Whether the coal mining corporations would like to have a public hydroelectric generator at River Bend is left to the reader's own understanding of our economic life.

Among the intangible or non-economic values of the Basin is the wild and beautiful Cacapon Valley from Capon Bridge, on U.S. Route 50, to Great Cacapon on the Potomac about 70 river miles above Harper's Ferry. The Cacapon River flows clear, fast, and cold. When it is at normal springtime stage it is a "dream cruise" through rugged country which resembles the Rouge, Red Gorge, and Black-tail



Great Falls on the Potomac

Andy Thomas

Canyons of the Upper Colorado River. Leich holds that the Cacapon is one of the finest natural river areas east of the Mississippi River because "a few high-way bridges and farmhouses with here and there a summer cottage, and one power dam near its mouth are the only evidences that you would not be cruising with the settlers of the Eighteenth Century."

The Basin has a number of other very nice, canoeable streams, and among those that can and should be protected from large impoundments or other large economic developments are the Smoke Hole section of the South Branch of the Potomac, with its remoteness and high ridges; Moorefield Trough, farther down the South Branch with its 4 mile long eddy and good fishing; and the North Fork of the South Branch where it flows through a gorge downstream from Mouth of Seneca, West Virginia. This stretch has terrific rapids and splendid fishing. There are more tributaries, especially the "little gems" like Scott Run below Great Falls and Antietam Creek, near Antietam National Battlefield Site, Maryland. These runs possess much esthetic charm because of the plants, rocks, and falls, although they are usually not navigable. They add satisfaction for those cruisers who like to explore the unfolding countryside on foot.

When a delegation from the Potomac Appalachian Trail Club discussed extensive recreation in the Basin this past fall with three planners on the staff of the Washington District Engineer, Army Corps of Engineers, they were cordially received and asked to assist planning by (1) specifying locations where each type of recreation may be enjoyed, (2) stating number of persons who visited each area during the year, (3) the average value received each day by a visitor, and (4) the annual loss that may be assigned for each recreational area in connection with the conversion of the area to another purpose. Since it is impossible to express extensive recreation value in terms of money, and probably pointless to put it on a man/day basis, it follows that justifying these important intangibles, which deserve prominence in basin management, to a bureau whose enabling act imposes narrow limits on its activities would be a difficult task. However, it is important to continue to make every effort to influence the thinking of the Engineers on the non-economic values. As a matter of fact, the constant tendency of our industries to shorten the work is aimed at eliminating the man/hour yardstick as much as possible from the lives of their labor forces! The writer and Philip J. Stone argued in "Potomac Playlands" that "sound recreational planning should provide for all forms of outdoor recreation, regardless of the number of persons interested. Democracy means not only majority rule but the protection of minority rights as well; this principle requires that minority as well as majority groups be heeded. . . . We will gain most by thinking, not in terms of equality of acreage or funds, but of equality of recreational needs satisfied."

A most cogent political principle is that needs are worthless unless converted into wants by the people, rather than a few officials and dedicated outdoor recreationists. In the long run, the people often do what they want to do but the rate of improvement of the management of the basic soil-water-recreation complex has not been commensurate with the need. Influencing the people is an astute science and is urgently needed in order to preserve the natural areas of the Basin.




Our hope lies in mustering a great demonstration of want by the voters to the Congress and legislatures of the four basin states.

Since the Cacapon Valley is the best natural area in the Basin and is only a 2½ hour drive from Washington, a proposal has been developed to protect it in its present state. The proposal has been termed the "Cacapon Wild Riverway" and is becoming a rallying point for the conservationists of natural areas. Here are to be found beauty, solitude, and primitive conditions, ideal for fishing, canoeing and foldboating, hiking and camping. It remains for alert, public spirited citizens to protect this stream from pollution, dams, and bridges, and its banks from buildings and highways. Several field trips have been made by river and afoot to determine the best sections of the river, the width of buffer strips on both sides, locations of primitive campsites, character of ownerships and types of land use, and access trails from the county roads, and to ascertain the views of the landholders. This voluntary work has been performed by a handful of Washingtonians and West Virginians and more work remains to be done.

For instance, meetings with the residents of the Cacapon Valley are especially needed to explain how the management plan would remove only the minimum of land from the tax rolls of Hampshire and

plan must assure permanent management of the valley while a large fraction of the acreage remains in private ownership. The West Virginia Conservation Commission would acquire small pieces of land, or negotiate easements for their preservation and public use. However, much depends upon the understanding and willingness of the landholders to permit responsible outdoorsmen and cruisers to use the area while the owners preserve the scenery, wildlife, and potability of the water. The plan does not contemplate direct participation by any federal agency, but it is expected that any engineering plans to develop the Potomac Basin will take full cognizance of the



The situation in the Potomac River Basin points up the principle that the Nation's cruisers should be ever ready to protect the best canoeing streams from impairment by ill-advised economic developments. Individual citizens should report specific areas with a high value for extensive recreation while the ultimate effect can best be achieved by cooperating with other groups in constructive, advanced planning for preservation of wild, recreational areas.

For more information write Mr. Johnston at the Potomac Valley Conservation and Recreation Council, 217 N. Wayne St., Arlington 1, Va.

Can You Handle a Tipover?

by WOLF G. BAUER

Washington Foldboat Club.

YOU probably can and have. But was there efficient cooperation between rescuer and rescued? We in the Pacific Northwest have learned a good deal from scores of dumpings on hundreds of trips. We've had to change our gear, procedures, and techniques only slightly in the past seven years, **although** we all feel that much improvement is yet to be initiated.

At the outset it might be well to remember that the class V expert loses most of his advantage in the water over the less proficient paddler—once both are struggling in the currents alongside their hulls. If we first trained the would-be-paddler in how to extract himself and boat from various dunking situations, we might have gained a more receptive student, willing to heed the words of the wise in subsequent paddling classes. Be that as it may, I am taking this approach as an excuse for choosing this topic at an early stage in a series of discussions in American Whitewater.

TYPE OF UPSETS Broadly speaking, these "emergencies" may be classified into foreseen and unforeseen types. In the former type we prepare to navigate a passage expecting to get a dunking but being mentally prepared, along with physical party support and gear preparations. (Of course some paddlers, I've observed, carry their mental preparation to the point where they manage to detach themselves from their boat even before a legitimate wave or rock can provide an excuse.)

In the unforeseen type, the tipover is often in relatively easy waters, catching the paddler by surprise and thus creating an "emergency." Frequently these so-called emergencies turn out to be hilarious and entertaining episodes to the more fortunate paddlers, but they can, nevertheless, become serious problems even on "easy" stretches. The factor of surprise and lack of preparation often contribute to confusion and mistakes and could lead to loss of boat, if not life.

DIRECT CAUSES OF UPSETS The stability of the foldboat or kayak in rough water is generally good because of its low center of gravity. I am now tempted to write at length about the techniques for increasing this stability under various conditions. But this must await another discussion. Suffice it now only to state the basic fact, namely that the paddler's body above the waterline represents a concentrated mass, often greater than the boat and gear. On the river, the paddler's body has momentum and inertia in one direction, whether the boat is just drifting or not. Thus if a crosscurrent, wave, eddy, or solid object suddenly slows down the boat or changes its direction, the momentum of the paddler's body acts to tip the boat. After momentum changes the angle, gravity does the rest. In this discussion we begin with the established fact that the paddler has already reached his ultimate stability, i.e., 90% below the waterline.

"RIVER-PROOFING" THE KAYAK FOR TIPOVERS

Several things can and should be done to the boat in order to increase the safety factor for, and the efficiency of the dunker after flipping.

1. **FLOATS**—These should be carried locked under the deck fore and aft, in order to lend buoyancy in case insufficient air is trapped when boat is bottom up. Large beach balls, small automobile inertubes, especially shaped air bags, etc., are best, while the heavier and bulkier cork, kapok, styrene foam, etc., are second choice.

2. **DUNNAGE BAGS**—These are rubberized nylon or cotton or plastic impregnated bags to carry spare clothing, food, camping gear, etc. They should be watertight not only to preserve the contents, but also to add buoyancy to the floating hull. To test their degree of tightness, close them and press down with your body weight. If they deflate only very slowly, say in one or two minutes, they should serve the purpose.

3. SAFETY LINES—These too we consider a MUST, and it is good psychology to call them by that name instead of boat lines or painters. They should meet the following requirements:

a. Both bow and stern safety line must be securely tied to the boat ends. We prefer husky brass snaprings for quick detachment. On some foldboats heavy rubber strips must be cemented to the boat ends to form a fastener strong enough to resist the maximum pull the paddler can exert under braced conditions.

b. Any two strong lines of not less than twenty feet in length are required. If heavy duty clothesline or braided cotton are used, they should be renewed each season. Manila is generally good for a couple of years if taken care of. Nylon lasts longer. Some use waterproofed fishermen lines. The best is glass fiber or other new type marine cordage which floats on water indefinitely.

c. To the ends of the safety lines we tie bright yellow or red sponge-rubber balls or floats about 4" in diameter.

d. The best method we have found to carry these lines is illustrated in sketch 1. The following advantages have been proven in many years of application:—firstly, they are always immediately at hand to be thrown or used from the paddlers position in the boat. Secondly, they cannot become tangled with the paddler's feet or body during tipping. Thirdly, they have a tendency to release and float free in the current after tipover provided the loops are correctly inserted in relation to the angle of the deck strap. Should the coils not wash out, the dunker can readily reach for one of the lines on either side of the hull while swimming alongside, and pull them free for use.

e. The purpose of these safety lines is primarily to serve as an easily reached and found towline by either rescue boat or dunker to pull the hull to shore. Only secondary to us is their use for tying up the boat, or for lining the boat by grasping both lines.

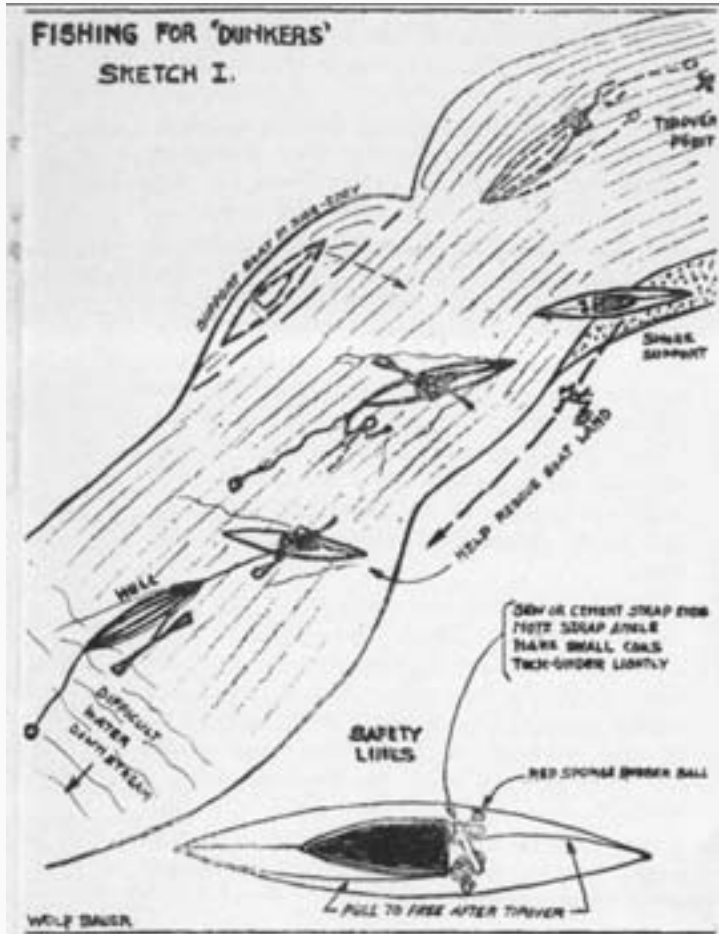
4. SPRAY COVERS—This is a subject all its own. Let me say at this point only that the paddler must from the very first recognize or decide how his cover

is to be used in an upset. It is either to be fastened to the cockpit coaming to prevent loss, or it is made to stay with the dunker.

In the first case the dunker must be able to easily slip out of it (by actual practice, not by advertised claims). In the second case the cover must unfasten from the cockpit coaming at the slightest pushes of knees or body twist (again by actual trial in water). In the case of the two-piece white water covers and aprons, the apron strips off the cover ring. In all types, should the release from body or boat fail, there must be provision to unbutton or easily tear the fastenings. This final safety factor is not to be overlooked, even in homemade affairs. At best, the cover is a nuisance and hindrance in the water.

Several years ago the writer designed and built a double-walled cover and attached apron combination which is quilted and inflated by mouth. It has proven surprisingly effective under all sorts of conditions. Most standard covers could be remodeled after this design by sewing and cementing a second layer over the first for inflation purposes. Its advantages should be rather apparent. The deck section becomes convex to better shed green water with anti-collapsing strength, and the quilted apron section remains erect and sealed to the body without requiring straps to hold it up. After an upset, the cover remains with the dunker as a welcome life vest and float instead of a nuisance and possible hazard. Under fullest inflation, one can ride on the deck section as astride a rubber water horse. The material I use is ordinary rubberized hospital bed sheeting.

5. LIFE VESTS—Each one to his own liking here. However, they ought to be carried loosely in the boat at all times, and worn under hazardous conditions. Our club uses a British surplus inflatable type which keeps back and shoulders free of inflated bulk, but causes the user to float face up, even when unconscious. They are small and lightweight, low-priced, and very popular with us. With the inflated safety spraycover described, the lifevest can usually be dispensed with.



6. RESCUE ROPE—At least one or two 100-foot rescue lines are carried in each trip party, usually by the leader, the scouts, or the rear guard. $\frac{1}{2}$ or $\frac{3}{8}$ " manila or nylon with attached sponge rubber float about 5" diameter is used. Next to the ball is also tied a hand loop as well as a snap ring. This end weight also helps in throwing from a coiled position. Obviously some throwing practice should be engaged in.

TECHNIQUE OF RESCUE PROCEDURE

On rivers there are as many emergency conditions as there are emergencies. It is therefore presumptuous to attempt to cover them with sweeping rules. Some variations from what we call "standard" or basic procedure is invariably dictated by the conditions found. However, we do follow some very basic lines of approach to most of these problems, and it is these fundamentals that we teach to our people.

SUPPORT PLACEMENT When the upset is a foreseen type, support boat or boats are anchored in the eddies or along the bank below the probable upset passage. It may be that such supporters have reached this location by lining or portaging down first. In a well-organized party, this is often the job of the scouts. The experts who have run the passage first may have kept together at fairly close intervals for parallel running support perhaps with additional throw-rope support from shore by others. If there are two or more supporters it is best to position a boat on each side of the wash-out spot. In a type of rapid where the dunker may get hung up on a rock, in an eddy, on logs or brush, or against a bank before reaching the support boats, then help must come from boats still upstream, or the downstream support must line upstream and then ferry to the dunker's aid.

THE DUNKER ALSO HAS A JOB

Now that the scene is set, it is imperative that first things come first by force of habit. Under simplest conditions of upset, the clunker now gets hold of the end of one of his safety lines and swims at right angles to the nearest safe eddy, bank, or shallows, pulling the boat behind him. It is understood that the hull remains bottom up at all times. If, after coming up alongside the hull following his flip, he finds the immediate water rough, aerated, or studded with aeration eddies and boulders, he will then decide to stay with the hull. Usually the best method is to reach and hold on to the upstream end, seeing to it also that the safety lines are floating free. He will now do his best to hold the hull ahead of him in line with the current. Thus he will also use the hull for both support as well as a potential bumper. He must take care not to rest too heavily on the boat end, as the angle may then cause trapped air to escape from underneath. He should also try to prevent the hull from being turned right side up by cross-currents as it is then easily damaged at the slightest contact with solid objects. The more air remains trapped under the hull, the easier is the berthing job. It may become necessary at time to float

the hull into a side or backeddy as it may become impossible to hold the partly submerged hull against a fast current alongside a smooth bank. Remember that the longer the boat safety lines, the more time is available for taking up the slack while heading for shore. Against this advantage, however, long lines are messy and easily tangled in the water.

There are, of course, situations of upsets in aeration eddies, in strong rollers, whirl eddies, and souse holes in which the hull is of no support and aid because of its gyration thrusts and dives. In such water it takes a cool head to leave the boat and make the current work for you. That is one of the reasons why we take pains in teaching the mechanics of various hydraulics. In one experience the writer tipped over a small whirlpool at the edge of a large whirleddy. As the boat was sucked vertically down foot by foot this dunker clambered upwards on the hull foot by foot until upon reaching the end it became rather obvious that this was a good time to leave the boat, much to the merriment of the gang being too busy taking pictures to lend a hand or rope. (These pictures, for some reason, are still not for sale to this highest bidder.) A tipover in an aeration eddy with jump roller this last summer proved the value of knowing something of river hydraulics to one of our members. His dunker, not being able to get out of the churning reversal, dived down and was swept out quickly by the bottom downstream current layer.

To repeat, however, we teach our people to definitely stay with the boat whenever possible, and especially when party support is available. The dunker and hull are then rescued as follows:

RESCUE PROCEDURE

With two support boats available one will take the dunker while the other will get hold of the hull. A single support boat may take both or concentrate on either, depending on the circumstances. Most often the support boat is in the easier water of the wash-out section where the swimmer can reach the shore by himself, but where time may be of the essence in berthing the hull before it reaches a more difficult spot.

1. SECURING THE HULL—The technique we use is rather simple but effective. The support paddler must always keep his hands and arms free for vigorous and often prolonged paddling during the tow. Upon coming alongside the liull, he grasps for one of the safety lines floating alongside, or he pulls one out from the standard location alongside the gunwale on either side. He then quickly reaches the end of the line near the rubber ball or float and clamps it in his teeth. The line should always be on the downstream side of the paddler's body or boat when pointing to the intended shore. Upon reaching the bank he may be unable to land, and must therefore simply hold on to rocks or branches until relief from dunker or shore support is at hand .

While pulling the hull with the line in one's teeth is safest and quickest from an instant-release standpoint, it may be objectionable to some. A pin, hook, or wedge-shaped slot in some reenforced part of the cockpit, or a corner into which the rubber ball may be wedged with a kinkecl-over line can also serve the purpose. However, it is unrealistic to expect every boat to always have such provision, even if recommended.

2. SECURING THE DUNKER—It is the support boats job to maneuver its stern alongride the dunker. In rare cases it may throw a stern line to the swimmer. The dunker will then either grasp the rtern, the stern line, or partly rest his chest over the stern deck, and thus be pulled to shore. The dunker will know not to tread water or cling vertically to the support boat but let his legs and body trail out flat behind him for minimum resistance. Under no circumstances should he try to climb up on the stern deck. If only one support boat is available, the dunker may hold on to the hull's safety line and drag it behind him while hanging onto the rescue boat's stern.

While no one likes regimentation and standardization, yet each whitewater group in our affiliation ought to find a minimum common denominator in safety gear and rules, within which a certain degree of standardization makes for efficiency during emergencies.

W MEW PRODUCTS

Summer camp directors as well as individual canoeists will be interested to learn that 16-foot fiberglass canoes, manufactured by the Pere Marquette Fiberglass Boat Company, of Scottville, Michigan, have been approved by the Boy Scout National Supply after long and rigorous tests to see if the new product would meet the standards set by the organization. The new canoe has proved its worth at Boy Scout and individual camps all over the country, and the National Supply has approved the use of this canoe in camps throughout the country.

In testing the fiberglass hull it was found that it withstood shocks and rough handling much better than conventional materials. In addition, it has the advantages of fully-impregnated color so that no painting is ever necessary. Also, this fiberglass may be left out in all sorts of

weather without ill effects. It is not subject to dryrot, so no maintenance problems have to be considered.

The new Pere Marquette canoes have low silhouette and therefore offer little resistance. They are obtainable in either of two models—with three thwarts and no seats, or with seats. The models weigh 82 pounds and 92 pounds, respectively. Both models come in white.

The company says it will allow price reductions for camps ordering the new fiberglass craft in lots of five or more.

OLD SHIP MODELS

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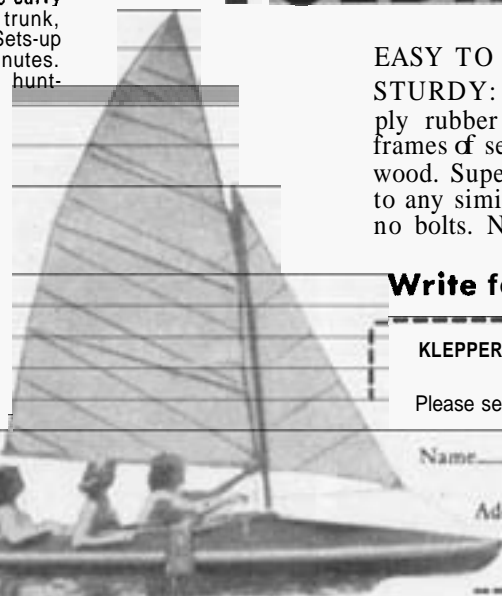
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BOOK REVIEWS

The Singing Wilderness. By Sigurd F. Olson. Illustrated by Francis Lee Jaques. Alfred A. Knopf, New York, 1956. 244 pages, map, 38 drawings. \$4.00.

To the canoeist ~~who~~ lifts his eyes beyond the gunwale of his boat, "*The Singing Wilderness*" will bring a thousand delights. For though the Quetico-Superior wilderness lake country is the frame for these essays, their appeal is far more general. Over and over the vivid words will spark the reader's own memories—of sights or sounds, of happenings, of the meaning and worth of the out-of-doors. The brief (six- to eight-page) sketches, each complete in itself, are grouped by seasons; they cover a wide range, evoking pictures of brooks and lakes, trout, loons and migrating geese, timber wolves, and rabbits in the moonlight, campfires, storms, and always, implicit where not phrased, the loved and essential canoe. There is scarcely a sketch that is not in some measure concerned with canoeing, for travel in this region is by canoe—paddle and portage, still lakes and roaring rapids. While each reader will have his favorite chapter, every canoeist will appreciate "The Way of a Canoe," which most poignantly paints the value and joy of the canoe on quiet streams, on wind-swept lakes, on swift white water, voicing what we all have felt.

A vigorous integrity pervades this book; its scenes are as true as they are entrancing. We find here not merely the superficial delineation of fondly remembered incidents and places, but a searching portrayal of the essence of the out-of-doors, the inter-relation of its varied elements and their effect on the observer. But so sincere is the author's structure that it is almost unconsciously that the reader absorbs many facts and lessons of the ~~wilder~~ nature's offerings.

The thirty-eight black-and-white drawings by Francis Lee Jaques are utterly charming. Their undoubted accuracy does not detract from their pleasingly decorative quality. The frequently pictured canoes convey truly the feeling of grace and competency inherent in the craft.

Though not specifically on canoeing, "*The Singing Wilderness*" is unquestionably a hook for canoeists.

Reviewed by
Marjorie Hurd

White Water Boating in Pennsylvania, Maryland, Virginia, and West Virginia. By Walter F. Burmeister. Ruck Ridge Ski Club, Philadelphia, 1957, about 100 pages, mimeographed, \$1.00 postpaid.

As the number of river guides expands with the growth of interest in white water boating, two types become evident. One is the guide which covers all the canoeable streams in a geographical area. The other is the detailed description of a particularly attractive or challenging river, based on experience gained from a trip or expedition. Walter Burmeister's guide combines some of the best features of both types. Not only does it cover many streams in the four-state area; the streams selected for description are the cream of the crop—difficult, scenic, pleasant, or all of these. It is a guide ~~which~~ should delight eastern white water enthusiasts, and perhaps provide a roaming Westerner with an indication of where to sample eastern streams.

In particular this guide performs a valuable service to eastern boating by including the little-known but magnificent rivers which drop off the Allegheny plateau of West Virginia, western Maryland, and Pennsylvania. These streams, with their deep gorges and steep descents, rank with the best in white-water and deserve to be better known.

The guide, which is loose-leaf bound for easy use during trips, consists of excerpts from a larger unpublished manuscript, WHITE WATER BOATING, by the author. It has been privately printed by the Buck Ridge Ski Club of Philadelphia. Twenty-eight rivers, indexed alphabetically by river name, are described, including both well-known favorites and less familiar streams in each state.

Each description begins with data covering distance, drop in elevation, time

Book Reviews (continued)

required, degree of difficulty (corresponding to the international rating system), scenery rating, and the average width. Pertinent maps are listed, followed by a brief summary of the type of river and the water conditions recommended. Of particular interest is the inclusion of a category, "Danger Points," which lists important hazards on the stream. This feature appears to the reviewer to furnish an answer to some of the difficulties met in attempting to rate a stream, such as whether it should be rated on the basis of its hardest pitch or its average difficulty. The synopsis of data is followed by a detailed description of the river which will serve as a useful guide to both the arm-chair paddler and one who is actually running the stream. The author's wide experience on eastern and western rivers and his knowledge of the runs described insure accuracy and authenticity in the information given.

From personal experience with both canoe and foldboat on many of these rivers, the reviewer believes that the evaluations given, although necessarily subjective, generally neither over- or under-rate the difficulties. The few factual inaccuracies noted in the text are not serious. The author's preference for the single-seater foldboat is evident but does not detract from the descriptions. A lack of precision in referring to the banks of a stream, using right or left one time and compass directions another, could conceivably cause difficulty to the inexperienced. These faults are minor, however, and the guide is definitely a valuable contribution to canoeing literature.

It may be ordered after March 15 from Mr. H. J. Wilhoite, 148 Rambling Way, Springfield, Pennsylvania, for \$1.00 post-paid.

Reviewed by
Samuel V. Moore

PATRONIZE the firms who promote the sport with advertising. TELL THEM you saw it in American WHITE WATER.

American WHITE WATER

Race News

Members are invited to these events, so be sure to list them on your official canoeing schedule for 1957. Final details must wait but here are the dates:

April 13, 14—Brandywine Slalom. This will be held on the Brandywine at Wilmington, Delaware and will be run by the Buck Ridge Ski Club.

The Potomac Canoe Cruisers Assoc. has changed the date of the annual Potomac River White Water Race to April 28.

May 4, 5—"Red Ridge College." Once again this annual course will be sponsored jointly by the Southeastern Pennsylvania Chapter of the American Red Cross and by the Buck Ridge Ski Club. It will convene at Hamburg, Pennsylvania where river knowhow and white water technique will be taught on the Schuylkill and Little Schuylkill Rivers. Be sure your best paddlers and leaders have the prerequisite Red Cross Basic Canoeing card in time so they may represent your group.

May 11-12—Eastern Slalom Championship. This race, sponsored by the Boston, Connecticut, and New York white water committees of the Appalachian Mountain Club, will be on the Quaboag River near West Warren, Massachusetts and just east of Springfield.

CIVILIZATION?

The problem is clear
If you bother to think it:
The trouble with beer
Is the people who drink it,
Who, hating to clutter
Their autos, unload
Their beer cans (when empty)
To clutter the road.

—edb

(Reprinted with thanks from the November, 1956 issue of the Sierra Club Bulletin)

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Guidebook Committee Report

by JEFF WILHOYTE, Chairman

This committee has worked long and hard to standardize guidebook terms.

IN the February issue, you were introduced to the Guidebook Committee, its function and its objectives. Since then the members have been continuing their work to prepare and recommend a uniform river grading scale for use in guidebooks.

The results of this work are duplicated here for the consideration of all interested groups and individual cruisers. The committee recommends that this grading scale be accepted as a tentative answer to the problem and that it be used in guidebooks, discussions and correspondence for about two years. At which time the Guidebook Committee will review nationwide experience with it and determine if alterations might be necessary.

All interested groups and individuals are encouraged to comment on the applicability of the rating system to the streams they cruise. Any of the committee members listed below will be happy to receive your comments.

Ruce Grant—6255 Chabot Road, Oakland 18, Calif.

Wolf Bauer—5213 11th St. NE, Seattle 5, Washington

David S. Stacey—601 Baseline Rd., Boulder, Colorado

Dr. Oscar Hawksley—Central Missouri College, Warrensburg, Mo.

Mr. Eliot Dubois—Sandy Pond Road, Lincoln, Mass.

Dr. Lawrence I. Grinnell—710 Triphammer Road, Ithaca, N. Y.

Walter F. Burmeister—Box 381, Shrewsbury, N. J.

Arthur Rodin—2315 Netherland Ave., New York 63, N. Y.


Howard J. (Jeff) Wilhoyte—148 Rambling Way, Springfield, Del. Co., Pa.

Following the recommended grading scale is an analytical chart prepared during the course of the committee's work which may be of some value as a basic aid to authors in computing ratings and

to serious readers in understanding the many factors involved.

INTERNATIONAL SCALE FOR GRADING THE DIFFICULTY OF RIVER CRUISING ROUTES

The following definitions have been developed by the American White Water Affiliation Guidebook Committee in cooperation with the American Canoe Association Cruising Committee following a study of grading definitions in use in various European countries and by several groups in the United States. An effort has been made to adhere to the intent of the International Scale originally promulgated by the Alliance Internationale de Tourisme Nautical Section and officially adopted by the International Canoe Federation in 1954.

The objective in preparing these definitions and the accompanying notes  been to provide sufficient guide posts so we might enjoy a greater degree of uniformity in interpretation. Suggestions for modification of these definitions that might produce greater clarity will help us improve the value of this effort.

It should be noted that the grading scale is designed to describe sections of a river, both on maps and in the text of guidebooks. On many rivers the most important difficulties are the rapids and accordingly, there is a tendency to think in terms of grading specific rapids. This is a normal and permissible use for the grading system, but not the primary intent.

Attention is called to the fact that the definitions are given in terms of physical features of rivers and their rapids. The features used are those that relate to (1) the boatman's success in negotiating safely and (2) the boatman's chances of a safe rescue should an accident occur. The features referred to in the definitions never occur together exactly as given, but define the degree of severity of common features and help create an impression in the reader's mind.

The overall objective of this work is to provide would-be cruisers with guideposts to help them develop river cruising skills and to help them enjoy wilderness

routes. SAFETY is the prime consideration. The necessity for instruction and practice with experienced river cruisers cannot be over-emphasized.

INTERNATIONAL SCALE FOR GRADING THE DIFFICULTY OF RIVER CRUISING ROUTES

<i>Rating</i>	<i>River or Individual Rapids Characteristics</i>	<i>Approx. Minimum Experience Req'd.</i>
<i>Smooth Water</i>		
A	Pools, Lakes, Rivers with velocity under 2 miles per hour.	Beginner
B	Rivers, velocity 2-4 mph	Beginner with River instruction
C	Rivers, velocity above 4 mph (max. back-paddling speed) may have some sharp bends and/or obstructions.	Instructed and Practiced Beginner
<i>White Water</i>		
I	Easy—Sand-banks, bends without difficulty, occasional small rapids with waves regular and low. Correct course easy to find but care is needed with minor obstacles like pebble banks, fallen trees, etc., especially on narrow rivers. River speed less than hard back paddling speed.	Practiced Beginner
II	Medium—Fairly frequent but unobstructed rapids, usually with regular waves easy eddies and easy bends. Course generally easy to recognize. River speeds occasionally exceeding hard back paddling speed.	Intermediate
III	Difficult—Maneuvering in rapids necessary. Small falls, large regular waves covering boat, numerous rapids. Main current may swing under bushes, branches or overhangs. Course not always easily recognizable. Current speed usually less than fast forward paddling speed.	Experienced
IV	Very Difficult—Long extended stretches of rapids, high irregular waves with boulders directly in current. Difficult broken water, eddies, and abrupt bends. Course often difficult to recognize and inspection from the bank frequently necessary. Swift current. Rough water experience indispensable.	Highly Skilled (several years experience with organized group)
V	Exceedingly Difficult—Long rocky rapids with difficult and completely irregular broken water which must be run head on. Very fast eddies, abrupt bends and vigorous cross currents. Difficult landings increase hazard. Frequent inspections necessary. <i>Extensive</i> experience necessary.	Team of Experts
VI	Limit of Navigability—All previously-mentioned difficulties increased to the limit. Only negotiable at favorable water levels. <i>Cannot be attempted without risk of life.</i>	Team of Experts (taking every precaution)

SUPPLEMENTARY NOTES

Notes on the *Application and Interpretation* of Grading Scale:

1. If a particular length of river cannot be characterized properly by one grade number, or if it alternates between a lower and a higher grade, two grade numbers should be used, e.g., 11-11.

2. If a length of river offers difficulties in considerable excess of the average at only one or a few short sections which can be by-passed easily by portaging, the more severe grade of difficulty is shown as an index number to the average grade, e.g., II₅.

3. A rise or fall in the water level will always alter the appearance and often the rating of a river or individual rapids. The grade given is as far as possible that for favorable water conditions. A rise in water level can increase the grade number, e.g., in fast moving rivers where waves are the principle obstacle, or it can decrease the grade number, e.g., in shallow rocky rivers. Likewise, fall in water level can either increase or decrease the grade number. Therefore the rater should attempt to indicate the water level applying to his rating .

4. Different streams may be graded equally yet offer entirely different problems, e.g., Grading III may be applied where the wave action is large but regular and it may be applied also where brushes and tree difficulties are an important consideration. If certain features (other than those normally apparent from maps), play a major part in determining the rating, the following code can be used to elaborate by suffixing to the rating number, e.g., IIOb

Ob Obstacles, rocks fallen trees, ledges, etc.

Wa Waves

Tu Turbulence, eddies, whirlpools, cross current

Vo Volume of flow

5. The above ratings have been written without regard for boat type or special equipment deliberately. Readers are advised to consult other books and experienced boatmen on this subject. For example: the use of spray covers on fold-boats and canoes adds materially to the

chances of negotiating successfully rapids of class III, IV, V, and VI.

Notes Regarding Safety:

1. Ratings B, C, I, 11., and III should be practiced in order under the guidance of experienced paddlers.

2. Ratings IV, V, and VI are tests for advanced river paddlers, are always hazardous and require a thorough knowledge of safety practice and rescue techniques.

3. *Never run any river alone!* Always have 2 or more boats in your party. Discuss safety and rescue before starting down the river.

Here is the analytical chart for the more mathematically minded:

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DIFFICULTY RATING CHART FOR RIVER

Prepared By Guidebook Committee AWW

Factors Related Primarily To Success in Negotiating			Factors Affecting Both			
SECONDARY FACTORS			PRIMARY FACTORS			
POINTS	Bends	Length, Ft.	Gradient, Ft./Mi.	Obstacles Rocks, Trees	Waves	Turbulence
NONE	Few Very Gradual	Less Than 100	Less Than 5 Regular Slope	None	Few Inches High Avoidable	None
1	Gradual	100 - 700	5 - 15 Regular Slope	Few: Passage Almost Straight Through	Low (Up to 1') Regular Avoidable	None
2	Few Sharp - Blind Scouting Req'd.	700 - 5000	15 - 40 Ledges or Steep Drops	Courses Easily Recognizable	Low to Med. (Up to 3') Regular Avoidable	None
3		5000+	40+ Steep Drops, Small Falls.	Maneuvering Required. Course Not Easily Recognizable	Med. to Lge. (Up to 5') Mostly Reg. Avoidable	None
4				Intricate Maneuvering Course Hard	Lge.-Irreg. Avoid. or Med. to Lge. Unavoidable	None
5				Torturous Frequent Scouting Required	Large Irregular Unavoidable	None
6				Very Torturous Always Scout from Shore	V. Lg. (5'+) Irregular Unavoidable Spec. Equip. Required	None

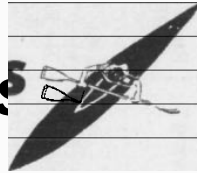
Rating
I
II
III
IV
V
VI

Approximate Difficulty
Easy
Requires Core
Difficult
Very Difficult
Exceedingly Difficult
Utmost Difficulty — Near Limit of Navigability

Total P



Club Activities



ELECTION OF A NEW SECRETARY

Each year the Secretariat is passed to a different section of the country. For the following year, Harold (Deacon) Kiehm will be the new Secretary, moving our center to the Midwest. His address is 2019 Addison St., Chicago 18, Ill.

Bob McNair, the retiring Secretary, will present his report on the year's activities in the Spring issue of this journal.

The Canoe Cruisers Association has been organized to encourage canoeing activities in the Potomac River Basin and adjacent watersheds

PURPOSES—The Canoe Cruisers Association will promote greater canoeing activity and use in the area and will sponsor regular canoe cruises for members and other interested parties. The CCA will provide leaders for such trips and will distribute schedules and other necessary information concerning these trips to all members.

The Canoe Cruisers Association will serve as a clearing house for information concerning canoeing conditions on waterways of this area. Members will submit information for this file to the Chairman and all such information will be available to all members contemplating cruising activities.

The Canoe Cruisers Association will sponsor periodic training courses such as the White Water Training Program completed in September, 1956. The purpose of these courses will be to instruct interested persons in techniques and safety measures which will enable them to increase the enjoyment and scope of their wilderness canoe cruising.

The Canoe Cruisers Association will hold occasional business and informational meetings open to all members.

The Canoe Cruisers Association hopes through such a program not only to promote canoeing activity but also to keep members informed about conservation and development issues which affect outdoor recreational opportunities in this area.

ORGANIZATION — The Canoe Cruisers Association is conceived as an

informal organization of like-minded enthusiasts. No complex organizational structure is contemplated. Association members will select a Chairman who may ~~succeed~~ himself, at an annual election to be held in September of each year. The Chairman will schedule cruises, assign qualified leaders and assistant leaders, serve as director of other Association activities and preside over Association meetings.

Other officers will include a Corresponding Secretary and an Information Director. The Chairman may appoint other special events officers as the occasion arises.

(Note: The organizers of the Canoe Cruisers Association have selected Andy Thomas, Chairman; Hob Harrigan, Corresponding Secretary and Bill Gilbert, Information Director for the 1956-57 season. Succeeding officers will be elected by majority of those members voting.)

MEMBERSHIP—All interested persons are eligible to join the Canoe Cruisers Association. Dues shall be \$1.00 per year, payable to the Chairman. Dues shall be used to defray Association expenses, chiefly printing and postage, along with expenses of special events such as the White Water Race.

Upon receiving dues the Chairman will return a membership card to the member. The member is then entitled to receive all CCA information, cruising schedules, notices of meetings, and other benefits described above.

* * *

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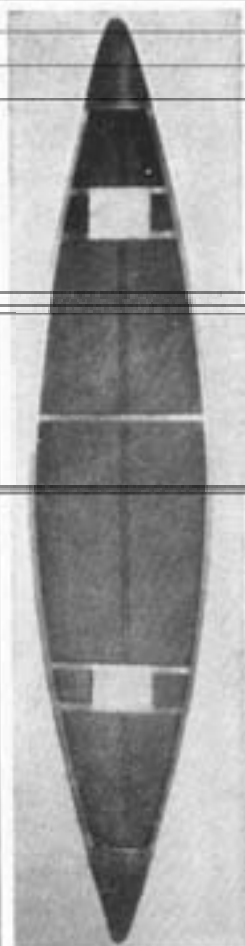
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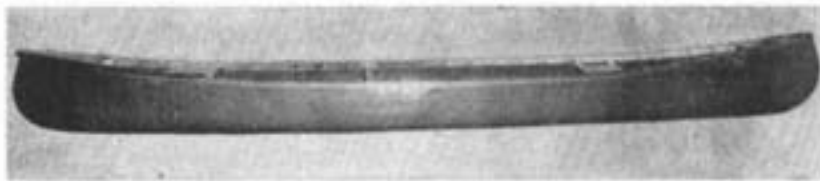
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