American WHITE WATER

JOURNAL OF AMERICAN WHITE WATER AFFILIATION

SUMMER 1957

Champion Ray Zubiri confirms:

The Strength and Maneuverability of THE HART-SIOUX KAYAK

Salida, Colorado
June 7, 1957

Dear Sibley,

I made many runs with the HART-SIOUX in the Arkansas and I can say that I have never had a better boat. I shot Tin Cup and Cottonwood Rapids each time with my paddle out of the water. The kayak carried me over the waves like a cork.

The HART-SIOUX kayak is the best touring kayak I have used—very stable, very maneuverable and very solid.

(signed) Ray Zubiri

Conqueror of the Royal Gorge, 1954
2nd Place Winner, Arkansas Race 1954
Pacer and Opener, Arkansas Races 1955 and 1957

Ray Zubiri skids his HART-SIOUX Adventurer around a slalom gate.

Send for free illustrated folder describing kayaks and accessories.
Exclusive Distributors of Hart-Sioux kayaks

FOLDCRAFT KAYAK COMPANY ● PHOENIXVILLE, PA.

ARTICLES

DEPARTMENTS

EDITOR — Dave Stacey

Eastern Advertising — Alfred Washington Circulation ..... Clyde Jones

Western Advertising ..... Elsa Bailey Art ..... Roy Kerswill

American WHITE WRTEK 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 Kd., Boulder, Colo.

Printed in the United States of America

COVER—Carlo Wetzel turns in the waves of Tincup Rapids (Arkansas) as Stefan Koerner works up the eddy. This superb shot by Miggs Durrance.

White Water Affiliation

We are many individuals who wish to promote river touring, and to keep in-

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. As a member I will receive issues of American WHITE WATER magazine in May, August, November and February. Here is my $2.00. My address is ...

Type of boat preferred: _____

Boating club membership: _____

Suggested articles: _____

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

tucky, 9 in Virginia, and 7 in West Virginia). It is estimated that $300,000 will be the minimum rehabilitation cost to A. R. C. in this county by itself.

Attached is my check for next period of membership; please send card to my Atlanta address, even though it will take us a couple of months to get the job done here.

Best wishes,
Rill Raney

need to use ybur knees, feet and fanny. If you cannot do this with a secure feeling in either your kayak or canoe, you do not fit it. Furthermore, you cannot get the maximum possible stability in wild water—or even average performance in slalom. Furthermore, you are missing the great experience of becoming one with your boat.

Dave Stacey
Editor

I and I have put down some notes culled from experience which might be worth something to the White Water kayaker who sets out to go down a river, without a guide, and with all his camping equipment. I was reared in what now might be called the "slightly old" west; the era in which traveling by car from Phoenix to Los Angeles was a five day adventure, fraught with innumerable hazards. No barbed'wire fences bordered the road, and one camped where one wished. The present "shutting in" of the open country has left those of us with a yen for the wilderness only one highway, and that is the river. It will be a long time before the river is lined with barbed wire, thanks to nature and its habits, and it offers an unparalleled experience for the camper. What it offers. to the fisherman is too obvious to mention.

So take the bit in your teeth and overcome the inertia that holds you back! I can give you only my formula; variations are without number. I assume you are a capable swimmer, and don't panic "down under," and that if you haven't been in a kayak you will first of all practice tipping it over under any and all circumstances. Then pick out your river, and write people, (they love to be asked —it makes them authorities!), get all the maps you can, learn what a 25 or 35 foot drop in a mile may mean—a long, downhill glide, or a series of steps with rapids, and so on. If you are waterwise, and I mean only at home in the water from a swimming and diving point of view, don't be afraid to tackle some of the "tough" rivers.

A two man kayak per person gives you plenty of room for gear. Deck over the cockpit with plywood, leaving a small secondary cockpit fitted with a spray cover. Such a cover I have described previously and stern line, of quarter inch manila rope, 25 to 30 feet long, and bring each line back to a point near the cockpit, where it can be coiled and loosely attached by a piece of cord. A spare pair of paddles, (usually the ones you damaged last year and then patched with fiber glass) should be stowed up forward, along with your fishing rod. The paddles you use must be tied on; you can't afford to lose them. It's surprising how little this tie bothers you. Use a piece of soft clothesline and put a firm half hitch about the center of your paddle, then tie the other end (5 ft. is ample) to the coaming, or to the plywood cover, just forward of your cockpit. The water tightens the half hitch in no time. If you are going to tackle any kind of a rough river at all, and have a rubberized canvas hull (rather than fiber glass), extra rubber strips on the hull are a must. These are sold by most kayak manufacturers, they reinforce the hull along the longitudinal members, where the hard scrape comes when you hit a rock, and they make all the difference.

Sit on a small air mattress; it makes a very comfortable seat, raises your center of gravity but slightly, provides 200 lbs. of buoyancy in case of upset, and at night you can sleep on it. I like to have an. other air mattress forward; it keeps your baggage drier and provides more buoy. ancy. So far as I know, no one has yet designed and marketed really large rub. ber bags shaped to fit the ends of kayak; little ones are available, but they are too small to amount to anything. Put pour clothes and sleeping bag in a waterproof (rubberized cloth) sack. Most Army and Navy outlet stores carry them. Double tie it, because this is the leakiest point. Then put the whole business in another waterproof sack and double tie this one.

ter—your lips. Mine, unfortunately, are rather sensitive, and no matter how much I try to sun myself on weekends in the spring, my annual ten days on the river turns me into a good facsimile of a Ubangi. No amount of chap-stick, applied every two hours or so, prevents this. So far, I have no cure, but I would suggest trying some brown make-up stuff; anything with pigment in it should help.

Remember, there's plenty of room in a double boat, so don't "rough it" more than you have to. Take along a couple of bottles of grog, a dozen eggs, and a few luxuries, in addition to the bacon and beans. Even in the hot southwest. bread will last a long time, if you seal it up against the dry air.

Finally, there is the life jacket problem. I know this is heresy, but we don't wear them unless the turbulence is terrific. So much depends on how you can handle yourself in the water. I wouldn't dream of tackling a big river rapid without one, but the Rogue and the Middle Fork of the Salmon have nothing you can't swim out of with ease—if you swim with ease. At any rate, the only type you can use in a kayak is the carbon dioxide variety—anything else gets in your way too much. There are lots of varients on the "May West," made for fishermen, that are far more comfortable than the Navy type.

So—onward and downward; bring on your watery highways, and we will ride them with colors flying.

* * *

Advertising Committee

As many of our members know, Advertising helps pay the cost of printing our magazine. An excellent job has been done by our Eastern Adv'ertising Manager, Al Washington, and by our Western Advertising Manager, Elsa Bailey. To increase the effort in this direction, an Advertising Committee has been set up. The Chairman is Henry Bercc, 1576 South Meade, Denver, Colorado.

We need additional members on this committee. People who feel they could be of service to our organization should write to Henry and volunteer their services.

Sweet Consistency, Thy Name Is Not Isaac Walton!

(Or a record of conversations bet een the undersigned in a kayak and various fishermen between East Branch and Hancotk. on the Delaware River, a 15-mile stretch.)

(A few miles after the start)
Me: "Do you know how far it is to Hancock?"
First Fisherman: "About 15 miles."
Me: "How's the fishing?"
F. F.: "Not too good."

(Several miles further on)
Me: "How far is it to Hancock?"
Second Fisherman: "About 5 miles or so."
Me: "How's the fishing?"
S. F.: "Not so good."

(A few yards further)
Me: "How farzit to Hancock?"
Third Fisherman: "About 20 miles, I guess. Say, you got something there!" (Referwing to single seater).
Me: "Ho 's the fishing?"
T. F.: "No good."

(About a mile beyond)
Me: "How far to Hancock?"
Fourth Fisherman: "Seven or eight miles."
Me: "How's the fishing?"
F. F.: "Not good."

(Several bends later)
Me: "How many miles to Hancock?"
Fifth Fisherman: "Ten or twelve miles."
Me: "How's the fishing?"
F. F.: "Not very good."

(About a mile further)
Me: "Could you please tell me how far it is to Hancock?"
Lady in front of a camp: "Exactly 5 and one-half miles."
Me: "How's the fishing?"
Lady: "Don't know."

(Just beyond)
Me: "How far is it to Hancock?"
Sixth Fisherman: "Close to a mile, I'd say."
Me: "How's the fishing?'
S. F.: "Pretty good!"
Me: "How many'd you get?"
S. F.: "One."

Roland Polmedo

The Case for Rubber Rafts

by DON **HATCH**

A top boatman discusses boats for the really big rapids.

and 4. ... they can and cannot operate. Their appearance during and after World War II revolutionized the river boating world. Since that time far more people have navigated large western rivers with rapids by rubber boat than with any other type used. They have done so for these reasons: 1. They are inexpensive 2. They are safe 3. They are easily portaged should the need arise 4. They operate easier in shallow water, thus extending their operating season three or four months longer than most Galloway, Sadiron, or power boats 5. They take more punishment and survive better on small rocky streams such as the Middle Fork of the Salmon River 6. The pontoon in particular can carry at least four times more passenger and gear weight than most other popular boats operating today. For most river running, operations I would say the pontoon is unbeatable in the department of safety and getting through the tough spots.

Rut with all these points in its favor, the rubber raft lacks in other departments. Certainly it is among the ugliest boats afloat today. No amount of paint can snake it attractive. It has a slow forward speed although it manuevers remarkably well through rapids, During the past few years motors have helped over-come part of the speed factor. Although the seats are comfortable when one sits on the rolls, the softness causes the rubber boats to bend and buckle with the waves. Most solid boat operators detest this action, but it certainly amuses the passengers.

I had an excellent chance to compare solid boat operation with rubber boat operation on a trip through Upper Granite Gorge in the Grand Canyon last season. I weighed the advantages and disadvantages at the time. My personal conclusions are these: The safest trip to date through the Grand Canyon can be made in a pontoon with a motor on the back and two oarsmen mid-ship. The advantages of this lay-out is obvious. Should the motor fail, oarsmen will continue doing a good operating job in a boat rigged specifically for oars. Likewise, oarsmen help turn and hold the craft into position. Thus far in operations through Cataract and Grand Canyon we have not found the need for a full oar crew and a full motor set-up to operate at the same time. The potential is certainly there when needed.

Potential exists in carrying power too. Because of the great space inside pontoons one is able to carry more emergency supplies, more food, more of the "comforts of home" if needed. On occasions I have carried a full tool kit—hammers, saws, drills, nails, etc.—a tool kit large enough to construct a wooden boat on the banks of a river should the need arise (and should I find the wood!) It is entirely possible to carry a rolled up spare boat inside a pontoon. Should one go to pieces, the other is ready to go. Foldboats have been carried inside on occassions.

Many people ask how it is possible to manuever with such loads. The answer lies in letting the river do most of the work, instead of the oarsmen. Here is the way we approach the difficult rapids facing downstream for best visibility. We're seated at least **30** inches or more above the surface of the water, and often times we stand on the seat to make a better inspection as we approach. After picking out the best run, the boatmen seat themselves, and should they desire to cut right or left, they angle the boat on about a 45 degree angle and row against the current. The resistance of the boat in the water effected by rowing causes the current to move the boat either right or left. Thus it isn't done with muscle power alone. A smart boatman can make use of the current ferrying action the way a

smart sailor makes use of wind on the sails on his boat. With the pontoon being 25 feet, long, the current is noticeably effective and useful. Upon entering the worst of a rapid, it is wise to point the nose straight downstream in most instances. Hang on too, for the ends of the boat "crack the whip." If the boat appears to be in the right spot while running a rapid, it is wise to "park" the oars in the air or waves will twist them from you or break them.

So far I have mentioned why we use pontoons for 90 per cent of our runs today. This wasn't the case five or six years ago. We used ten man rubber boats almost exclusively. I took one from Green River, Wyoming on the Green River, to Lees Ferry, Arizona in about thirty days and experienced no "pain." Dick Griffith and his wife Isabel soloed from Wyoming to Hoover Dam in one ten man. Others have used the small seven mans even through such giant killers as Grand Canyon, but with less success. We didn't abandon these boats because of instability, but because they carried no more than the Galloway or Sadiron boat. We desired to carry more supplies for passengers and have an even safer trip, thus the change by us from ten mans, to pontoons.

Stability of a ten man boat lies in its rigging. We believe a solid oar frame resting on the boat is all but indispensible. We've tried many other ways, but this seems best. A wooden seat, wooden foot rest, and wooden frame all aid to improve rubber boat performance. In such a rigging you obtain some of the best qualities of wooden boat performance and maintain the fine qualities of the rubber boat. The use of paddles on rubber boats have proven inferior to most all other rigs. River runners are all but unanimous on this point. Paddles have been used successfully through bad canyons, but success was due mostly to low water and not to the paddle system. A high water run through Grand or Cataract Canyon with paddle would be next to if not disastrous.

Rigging a suspended floor in the pontoons keeps gear high and dry while passengers obtain sure footing. Angle iron frames provide part of the floor which is suspended from the rower frame. Suspension is done with chain. Series of boxes can be wedged between the rubber rolls for storage of food, tools, etc. Boxes should be water tight, of course, with rubber gasket lids.

Many people believe that rubber boats will become extinct as did the dinosaurs. Surely they're just as ugly, but don't deserve that end. Demand has certainly out-lasted supply, and undoubtedly we'll see no more of rubber boats should the present trend continue.

My case, then, for the rubber boats has been stated. Hut one important afterthought. Unskilled operators can get hurt regardless of the type boat they use. Stay out of rough canyons if you are unskilled.

Bus Hatch and Joan Stacey on the Yampa *Dave Stacey*

was held again this year at Salida, Colorado, in conjunction with the International Slalom and the 9th Annual Arkansas Downriver Boat Race. Due to the unusual spring run-off this year, the water was particularly high anti fast during the week of the races. The Arkansas was up to a record depth of five feet through the center of town (though I understand that later it was an unbelievable nine feet.)

Dave and I were fortunate enough to go down to Salida a few days early, set up a few slalom gates, and practice with them. These hours of practice seemed invaluable later in running the courses, because of our familiarity with the speed of the river. This also gave us some much needed conditioning, as our boating had been very limited prior to the races. To me, this is the only drawback in entering the Salida competition. It comes so early in the boating season that we're in pretty sorn physical shape to take such a rough race.

The first heat of the Championship Slalom was held Friday afternoon, June 7th. We had already run two heats of the International Slalom, and the course was changed only slightly. Due to limited magazine space, I shall only try to describe the National course. This consisted of fourteen gates, almost all of them difficult—as far as I was concerned. At this point, I might explain that slalom course is made up of pairs of poles, red and white, green and white, or solid red (or green.) Green is taken to the right of the competitor and red to the left. A black and white pole (as in the "H" gate) may be taken on either side. A **360** gate is marked by a solid red or green pole and may be flanked by a red and white or green and white pole. The competitor must make a complete 360° turn in a clockwise direction if green for the competitor to pass twice the line between the solid loop pole and the limiting pole, and during the **360** of the loop, the right side of the boat must be toward the pole if green and the left side if red. A reverse gate is set up exactly as a normal gate, however it must be passed in the opposite direction going backwards. The back of the racer at all times is toward the gate. .\ barrier is marked by several suspended yellow poles and is an obstacle along its full length. A combination or "flush" is composed of three poles set in a line at a distance between each pole of less than 5 meters.

The start of the Nationals was the usual up-river gate on the left hand bank of the river. After straightening out, No. 2 was a conventional pair in the middle of the river. From there you went to No. 3 gate, one of the difficult **360's** on the right bank. The current, as swift as it was, made quite a chore of paddling back up stream to get through the gate. As I recall, just to make it a little more interesting, a rock was sticking out as you made your turn into the bank. I found I then had to paddle up stream after completing the gate because of **No.** 4, which was on the opposite side of the river. The experts took this gate with a back ferry across the river, but I found I didn't have the strength—so I had to go back upstream a second time and front ferry across. No. 4 was a straight-through gate, but you had to get lined up accurately. as it was very close to a large overhanging tree. If I recall correctly, this upset a number of boats. Nos. 5 & 6 were straight through in the middle of the river, with waves in the middle of the gates. These two led to No. 7, an "H" gate which I found practically impossible, as it required a good deal of backferrying at the crucial moment **to** avoid hitting the bar of the "H" No. 8

was a "flush' combination which also took maneuvering at just the right moment, and few contestants were able to manage both 7 and 8 without penalties. The course then straightened out with 9 under the railroad bridge (Salida is indeed fortunate to have so many bridges in the middle of their slalom course!) No. **10** was again a **360** on the left bank. From this point, the course differed slightly from the International Slalom. In the Nationals we then pulled quickly across the river to make 11 and 12, both straight-aways under the right half of the highway bridge. Just after these two gates came the barrier which, if you missed it, allowed you to squeak through on the right side, avoiding a concrete abutement. After the barrier came No. 14 gate, a **360** on the right side of the river, with 15 the only reverse gate in the race, situated in the current in midstream. The finish in both races ended on the left bank.

It was an interesting course, but tough, and most contestants were assesssed several penalties. The results are given below. Listed is the best time of each racer from the two heats; in other words the final standing in the championships. With feminine pride, I would like to point out Carol Kane of Salida, the winner of the Women's Division. Please note that her time was better than any of the men racing, making a beautiful and skillful first run of the National Slalom. It was a pleasure to behold. We were all happy to see Dick Straton of Boulder win in excellent time. He has worked long and hard, and certainly deserves victory. As the Men's Champion, Dick will go to Europe this year, representing the United States in the World Championships. I am happy to say Carol will also represent us, and my guess is that she will be hard to beat, even by world champions. Runner-up Eric Frazee of Salida, only a few points behind Dick, will also be competing. All members of AWWA wish them the best of luck, and may they have the greatest success abroad. We're sure they will!

Kayak Class—Men	
1. Dick Stratton	483.5
2. Eric Frazee	490.0
3. Larry Zuk	590.3
4. Larry Campton	632.4
5. Dave Stacey	646.0
6. Roy Kerswill	671.1
7. Charles Dailey	865.2
8. Steve Bradley	1005.7
9. Tom Tellefson	1186.4
Kayak Class—Women	
1. Carol Kane	406.0
2. Joan Stacey	889.4
3. Paula Zuk	1485.4
Canoe Class	
1. Larry Zuk Roy Kerswill	763.4
2. Larry Monninger Paula Zuk	1006.1
3. Dave Shapiro Rob Fullerton	1424.0
4. Tom Able Ike Bennett	No Time

Starting the run — *Dave Stacey*

WATER-ON-THE-MOVE

by WOLF BAUER
Washington Foldboat Club (Seattle)

Another chapter from Wolf's authoritative book.

MOVING or running water—in this the first foldboat was baptized, and for this all foldboats are primarily designed. In the dynamic medium of the water's currents, the foldhoater and his kayak find their highest expression and excuse for being. What the sweeping downhill slopes of powder snow are to the skier, a spanking breeze on open water is to the sailor, or a mirror smooth ice-covered lake is to the skater, the downhill glide of a dancing and sparkling current of water is to the foldboater.

Running water is complex. Its manifestations and forms are many, and although the river tourist need not be a hydraulics engineer to understand its characteristics, yet he will have to come to certain fundamental conclusions if he is to become an expert kayak riverman. I am well aware of the problem and task confronting me on writing a chapter on popular hydraulics tailored to the needs of the river traveler. I am also cognizant of the much-publicised theorem that book learning is no substitute for experence. Thought, however, must precede action—if action is to be efficient. Thought expended during, or coincidental with action is generally too hasty or too late to be of use. Thus mental training must precede physical application, unless we have the time and money, and can make ourselves entirely free of worry and r - sponsibilities in learning by "experience", as so many advocate. I, for one, have learned from teaching foldboating to others, that lack of proper visualization, lack of terminology and mental classiflcation, lack of understanding of cause and effect in their proper relations to the fundamental laws of physics, can become a serious hindrance to the proper development of paddlers who want to maneuver and navigate over running water. In book study, some people need detailed descriptions and illustrations, or additional concrete examples before being able to digest a simple truth. It is all very commendable to learn by practice, hut to make practice count, a leader is needed to point out the hidden roadsigns along the way. That is the function of running foldboating courses both in the classroom and in the field. The purpose of this series is to take the place of a class-room instructor for those who do not have an opportunity to take a course.

In observing people's action during trips, it has become astonishingly apparent to me that some individuals continue to make the same fundamental mistakes in navigation or boat maneuvers, while others make them once and immediately thereafter seem to be able' to form their conclusions and set up a mental readjustment based on understanding. It is no coincidence that people in the latter class invariably are those which had previously taken a course in foldboating and study of water action. This shows that such a course itself did not entirely prevent them from making a mistake the first time, as reflex cannot be developed by study, hut it does show the value of study and understanding in overcoming habits and problems more quickly.

Running water is so different from still water that the newcomer to river travel, be he an experienced hoatman or not, is invariably but falsely lulled into the belief that his fortner boating experiences will stand him in good stead in navigating on rivers. These differences in the water are seldom apparent on the surface, so to speak, and what looks harmless and simple often turns out difficult and complex. By the same token, what appears an extremely hazardous stream condition to the uninitiated, is often of little concern to the veteran who can interpret cause and effect in their true proportions. Some fundamental comparisons and facts about the dynamics of running

water will therefore be discussed in this issue, as upon these rests much of that which follows later.

The ocean traveler on deck of the steamer, the yachtsman in the cabin of his cruiser, the pilot controlling the power of his engine and speed of his boat, the fisherman' trolling along in a skiff with an outboard motor, they all, in comparison with the river paddler, travel in a medium presenting little sudden resistances or unexpected shifting forces to the boat hull, and so they travel more or less out of touch and feel with the water itself. Not so the man-kayak combination on moving water, where navigation is actually a continuous mental exercise in interpretations of water phenomena, followed by the physical exercise of dealing with the dynamic forces of running water. The riverman must, therefore. not only master navigation, but he must also know much more about his dynamic medium than his fellow sailor needs to know about the lake and sea water under his hull.

Moving Water Has Force I have already pointed out that water can be visualized as being made up of an infinite number of thin layers which slip upon each other with very little friction or shearing force. Thus, since water can slip in all directions equally well, it also can exert a push or force in all directions. When *a* force, such as a piston or merely the weight of overlying water particles push on a water particle in a container. be that a tin cup or lake basin, this same force at that level in the water also pushes out equally against the sides of the water container. We say that water has pressure. and by this we mean that it exerts a force upon a specified unit of area. Generally the unit of pound for weight or force. and square inches as unit for surface or area is used, and pressure then becomes pounds per square inch. The weight of water is 62.4 lbs. per cubic foot as pointed out previously, and thus it exerts a pressure of 62.4 lbs. on every square foot of area it touches for each foot of height above this surface. Dividing by 144 to obtain pressure per square inch instead of square foot, we find that for every foot of height or depth of water we add 0.43 lbs. of pressure. This is therefore the same whether we put our hand over a hole in the wall of a dam ten feet below the lake surface behind the dam, or whether we hold our hand against the same size hole in the bottom of a rertical ten foot drain pipe filled with water.

Running water has energy and force that is greater than just its weight or static pressure just discussed. This extra force or kinetic energy is the one we must now learn something about. for it provides the basic differences in paddling on still or on running water. Primarily, this newly added force is the momentum force related to the speed or velocity of water curernt. Let us fix in our mind the following relationship: The extra force due to velocity is that which would be required to stop the forward motion of the sliding mass of water. This dynamic thrust expressed as

$$P = \frac{WV}{g}$$

where P is the thrust in pounds, W is the weight of water per second flowing against a surface at right angle to it (for the engineers among the readers it is obvious that we must multiply this by sin θ, where θ is the angle of current against the surface), and where V is the average current velocity in feet per second, and g is the acceleration due to gravity (32 ft./sec./sec.) can then be applied to compute just how much force moving water can exert. Few paddlers will take the trouble to use the formula, but more frequently it will be put to practical test or proof by those who do not believe in the relationship it represents, this "testing" being more often in the nature of a slight miscalculation or slow reflex. Suffice it that we may be duly impressed that the force varies from 12 to 75 pounds against our lower legs when standing knee-deep in currents from a sluggish 2 miles per hour

In this article, American White Water continues its presentation of parts from Walt Bauer's forthcoming book. It should be noted that the copyright of this material remains in the possession of the author. It is planned to present sections of this book in each of the future issues of American White Water.

to a Past 12 miles per hour clip. If, for example, we were able to stand up in these currents up to our neck, the push would then vary from 75 to 450 pounds, while held by a rope in a swimming position this same amount of submergence would show only about 10 to 150 pounds. If our kayak were capsized and plastered broadside and submerged against a log or large boulder or pier, the total force against it could reach 10 tons or 20,000 pounds in a 12 mile curernt. Thus even a half-submerged kayak stuck broadside or even at some angle to a slow current may have to be disassembled piecemeal, as there are never more than a few hundred pounds of human power available to budge it. That this is so, most veteran foldboaters can atest to. The first experience with this hydraulic thrust usually comes very unexpectedly when beginners in a double seater paddle unconcernedly with their usual delayed reflex along the outside of sharp river bend or upon a suddenly-looming log or rock in a slow stream. Pointing away from the object at the last moment they find themselves sudenly plastered broadside to the object, unable to push off or move away. This then sets the stage for one of the many comical situations beginners contribute to the amused entertainment of their veteran companions. If these "sitting ducks" in their stuck kayak are unaware of the aforementioned thrust forces exerted on their hull, they will, of course, proceed industriously to push off. To their amazement and chagrin, one of two things will happen; they will either unceremoniously tip over on the upstream side while engaged in pushing off, or they will find the boat unshakably held as in a vice. It is safe to say that we can leave them now under the influence of tihs hydraulic thrust for a while, knowing.that they cannot so easily get away for the moment, and hold off giving them further advice on their predicament until we arrive at a later chapter in the handbook.

What then must we learn from this momentum force of water due to its velocity? Obviously, we do not have much opposing force or personal strength available to counteract this thrust of moving water, even in slow streams. This requires a new concept in handling one's boat in a current. We might as well be philosophical and let running water have its way, for it will not be denied. The force of moving water on the boat hull is no more powerful in a large stream than it is in the smallest navigable streamlet, provided the current speed is the same in each. Our new concept is simply stated. The velocity (and force) of moving water is only relative to the boat and NOT the river bed, the obstacles, or the banks. In other words, if the boat is carried along by the current as in drifting, no dynamic force is exerted, and the boat is simply buoyed up as in still water. The difficulty most beginners have when first exposed to the realm of water-on-the-move is the sudden change in conditions, this sudden appearance of forces from zero on drifting, to maximum on stopping in relation to stationary or fixed objects. Under ideal conditions then, and for the sake of clarity, it can be said that no forces need to upset our equilibrium or tax our strength or maneuverability on a stream as long as zero velocity is maintained with the currents. If the boat opposes the current either by moving or being held against it, the the power of the thrust applies in direct relation to the boat surface exposed and the differential velocity between the boat and the water.

It should hardly be necessary to point out that the force is greatest when it is normal to or at right angles to the opposing surface, antl least when the angle between surface and curernt is very flat and small. This is the reason for streamlining a boat, a pier, or any submerged object in a moving stream, namely to present to the water a surface which has the flattest or smallest angle for least resistance or counter thrust. In all boat man-

Wolf *Bnuer*

Figure 1. An upstream roll is imminent here. Note that the boat gunwale is already submerged, thus increasing boat surface and pressure far beyond that available for recovery.

Figure II. The correct way is lo lean away *from the* current. *Note how easily the paddler balances the current pressure by leaning and slightly lifting the upstream hull bottom for minimum direct water impact.*
Wolf Bauer

euvers or handling techniques on running water, the paddler must keep in mind the three variables,—surface area opposing the water, angle at which water strikes the surface, and speed of impact of the current upon the surface. Working the paddle blade under water at various angles and speeds illustrates the point. As indicated under hull design (yet to be published. Ed.) it is the laterally flaring and slightly rounded bottom cross-section of the river kayak, which, although initially less stable, yet reduces the side impact of sudden currents acting on the hull from the sides, and so gives the paddler more time and less sudden tipping to effect a Countermeasure for still further reducing this angle. Upon this effect of the angle of impact rests the technique of controlled tipping or paddle-bracing.

Applying Our Know-HOW While at this stage we are not ready to discuss boat-handling techniques in running water, yet it would make the subject a bit more interesting in magazine serial form to point out at least a few watermanship principles or techniques in the light of the hydraulic phenomena discussed.

Three photograpsh were chosen to illustrate a single principle. It is one of the first the river traveler must recognize and apply constantly. Hesitancy or slowness in reaction, or complete disregard for this principle is a main reason for most kayak upsets. It deals with the failure to react properly to a side current suddenly hitting the boat. For this our constant admonition and slogan is: LEAN AWAY FROM THE ONCOMING SIDE-CURRENT! Otherwise the force of water on the side of the hull will tend to roll the boat upcurrent. The illustrations show two examples where sudden current forces hit the boat side. In Figure I the boat has been stopped sideways by an object in the current. The boat will now have a strong tendency to flip or roll *upstream*. Since the normal reaction of a paddler to an imminent collision is to lean or brace away from the approaching object, the force of the water against the submerged upstream gunwale will readily tip the boat upstream. This natural tendency of leaning away from the object must be corrected early in field instruction classes, as the act of drifting sideways onto a log pile and then fliping upstream could have serious consequences. Figure II shows the correct lean away from the *current* at the moment of impact. Figure III shows the extreme counterlean when crossing a powerful jet at right angles. The principles in cause and effect are the same in both cases.

While the slogan is *lean away* just before or at the instant of expected current impact, one must nevertheless have something to *lean on* on the downstream side. In Figure II this support is obviously the log or rock, while in Figure III it is the paddle in the paddlebrace.

In the next issue of American Whitewater we will treat in detail the first phenomenon of turbulent water, namely the basic features and mechanism of the EDDY, including back, side, aerated, submerged, and whirl eddies.

Wolf Bauer

Figure III. Crossing the eddy line into a strong jet requires the same principle of leaning away from the current *side thrust. The paddle brace provides the safety factor for adjusting to any miscalculation in the amount of initial tilt the boat has been given.*

Parade, one of the most thrilling river spectacles in America.

At Blue River, deep in the fir covered hills, one hundred or more light boats take to the steam for a twenty-mile hair-raising ride through churning, hungry rapids to Leaburg Dam, twenty-five miles east of Eugene, one hundred and twenty miles south of Portland.

Tens of thousands of visitors from all parts of the nation line the banks of the McKenzie to watch the boatmen fight some of the swiftest and wickedest white water in the West. At each of the twenty treacherous rapids the crowds are so thick that several of the more agile spectators climb trees for better views. The banks above Martin Rapids, the most vicious, boulder-laden, hellish trough on the McKenzie, are jammed hours before the first boat passes through—or capsizes.

When the river is high, hiding the boulders from view, even the most experienced boatmen have to call upon every trick they ever learned to stay upright. Those not so river-wise either get through on luck, call it quits before running into the more menacing caldrons, or take a drenching.

Between rapids the McKenzie is not so brutal, but no part of it makes for gentle cruising. On a relatively calm stretch last year, a glacier-cold curler swept across the bow of the boat I was riding and drenched me to the bone. From start to finish, I was pitched and tossed so often I felt I was riding a bronco gone mad.

The parade, which takes place the last Sunday in April, was started in 1938 by the McKenzie River Guides, an exclusive organization composed of expert outdoorsmen. The first "float" was part and forty boats taking to me river one year.

The guides still conduct the White Water Parade and carry the responsibility of preventing fatalities. Thus far, though scores of boats have overturned, there have been no deaths. Knock on wood! Hut there have been several close calls. In 1953, seven boats capsized, three in quick succession at Martin Rapids. Only prompt action the part of the guides, who patrol the float and station themselves at the more dangerous places, prevented a drowning.

Knowing how treacherous the river is, the guides insist that all participants wear life jackets. Last year, before the parade started, I jokingly said to Prince Helfrich, the legendary guide who has conquered every western river, "Shucks, I can swim across the McKenzie with one hand tied behind my back."

"No, you can't,' he replied. "I'd hate to see anybody try it, especially near a rapids. The river is swift, the swirling water would suck you down, the rocks would chew you to pieces, and two seconds after you fell into the river you'd be too numb to do anything. That's why we insist on life jackets and watch the boats so closely."

The variety of craft makes for an interesting spectacle. Every parade sees several folding boats and up to a dozen rubber boats. Most of the craft that drop out early are kayaks and rafts, but some make it through to the end—and don't ask me how!

Greater in number than all other crafts put together are double-ended skiffs with extreme rakes and flares. These boats, standard on practically every rough river carrying enough water to keep them from being grounded, are known as "McKenzie River crafts."

The skiffs, built by Woodie Hindman of Springfield, Oregon, average two hundred pounds in weight, fifteen feet in length, and seventy-two inches in width amidship. They are built out of half-inch plywood and quarter-inch plywood forms, and sell for around two hundred and fifty dollars.

The Hindman-built craft in which I was riding, as a guest of the McKenzie River guides, was piloted by Dean Helfrich, son of Prince. Although Dean is only sixteen years old, he handled the boat as capably as any veteran riverman I have seen.

Dean's sweep through Martin Rapids was a masterful job of rowing. Pausing at the gateway to the boiling trough, he lined up his course, then executed each maneuver with beautiful precision. First he rowed straight for Elephant Rock, an immense boulder that looks like the side of an elephant from a distance; then, when it appeared we were about to crash, he spun into the narrow channel, steady on the oars as we shot breathlessly through the roaring cataract.

The float is not a race and there is as much honor in coming in last as first. "The important thing," says Prince Helfrich, "is to conquer the river and have a good time doing it."

Halfway down the twenty-mile course the boats put in at the John West Ranch for lunch, which is served by the wives of the guides and is eaten on the beach. Some of the boatmen bring their own food or, rather, have their wives meet them at the beach with a full picnic basket. Mine met me with roast chicken, hot coffee, and dry clothes. And don't think I didn't appreciate changing into warm duds!

The White Water Parade is held in one of the most scenic sections of the Pacific Northwest. The riverbanks slope up to green hills, covered with ancient and stately Douglas fir. To the east are the snow-covered peaks of the Cascade Mountains, dazzling white in the clear sun of early spring. All around are the sparkling splendors of nature.

One word of advice. If you want to see the parade, come early and find yourself a "seat" by a rapids. The boats take to the water at ten in the morning, and by noon there isn't a place to park.

Everyone joins the fun. *Oregon State Highway Commission*

KAYAK HULL DESIGN

Part III

by STEVE BRADLEY

We continue the story of the trials and rewards of a boat designer.

HULL I, the fifteen and a half foot, broad beamed fiberglas two seater, had its initial shake-clown cruise in Dinosaur National Monument. Bus and Don Hatch in neoprene rafts skippered the task force, accompanied by three conventional two seater foldboats. It was an ideal condition for testing a new hull.

In the quiet water of Lily Park, before the canyon coutry begins, I had my first feelings of disappointment. The sleeker foldboats easily pulled away from the new hull, leaving us far astern. Though not designed for speed I had hoped for better results.

In the canyons, however, the picture changed. The new hull could out maneuver the foldboats at every turn. In its ability to turn quickly to avoid rocks or to cut corners it was in a class by itself. When it did hit rocks it slid over them with *a* greasy ease that neither damaged the hull nor upset the occupants. In the bigger waves antl heavier turbulences of the Green River it had superior stability, though I felt that it pounded in the waves more than it should. In all we were encouraged.

No doubt we would have continued our investigations of two seater hull design indefinitely if we hadn't gone to the International Races on the Arkansas near Salida, Colorado, that same year. We had heard that the Europeans were abandoning the two seater in favor of the more sporty single seaters. The superb skill demonstrated by Eric Seidel, the European Slalom Champion, the relaxed easy style he had, and quick way he could maneuver his small single, clearly showed us how far behind we were in America in our kayak handling; and it also clearly showed us that the two seater was becoming an extinct species.

Our second hull began to take shape on the drawing board the following winter. It was a single seater, which we called the "Colorado," beginning our tradition of naming each new model for rivers. We did not feel that we knew enough about hull design to depart drastically from the direction taken in designing Hull I. Nor were we particularly interested in that highly specialized antl limited aspect of the sport.

As with our first hull we wanted to create a good, stable, highly maneverable single for recreational use. Shorter and smaller than Hull I, the Colorado would definitely bear a family resemblance. Design improvements included a slight V to the bottom, more deadrise, softer bilges, increased keel rocker for easy spinning. and greater sheer at the gunwale.

Sheer, the curving upward force antl aft of the deck line, is an elusive element. On paper Hull I had what I thought was ample sheer. In three dimensional form, where the element of perspective must be ronsidered, it appeared to have none. The sheer of the Colorado was nearly double that of Hull I. In the water it is barely discernable, leading to a general design rule: use almost twice the amount of sheer you think you will need.

In the spring of 1954 we completed the mold and fabricated one model of the Colorado barely in time for Dave's expedition clown the San Juan. I decided to delay the lay-up of my model until hearing from Dave. A brief post card mailed at Mexican Hat indicated that he had run it once on a lake somewhere and was pleased. Then, silence. It was like spending an eternity in the waiting room of a maternity ward.

Dave returned with enthusiastic accounts of the Colorado's performance. Hull I was also on the journey. In every respect, including its ability to handle waves and turbulences, the Colorado was superior to our first hull, and far more exciting to use. He was so pleased that he planned to enter it in the Arkansas Races that year.

(*over*)

Against tlie European racing hulls it was obviously slower: but in its ability and maneuverability it seemed to be a far safer boat in white water. Not once during the week of pre-race training on the river, nor during the race. did the Colorado threaten to capsize, a reassuring record for a craft on a river wliere flipovers, even among tlie experts, was a common event.

It takes several years to complete the testing of a new hull. We ran the Colorado all that summer, and on the following June we jointly entered the races at Salida, arriving early to participate in the best phase of the entire program, the pre-race cruising on the river with the other contestants. Again we had the opportunity of studying the new European racing hulls, and of comparing their performance with our slower, but more stable Colorado. Flip-overs were frequent in the narrower boats. Neither Dave nor I felt critically close to capsizing at any time. Apparently the Colorado was successful as a recreation hull; somewhat less than successful as a racer. Among other things she pounded too heavily in the waves, a feature that will retard the speed of any boat. Perhaps too much beam; definitely to much forward bouyancy.

One annoying feature, apparently inherited from Hull I, was the Colorado's tendency to veer sideways whenever you stopped paddling. The sleeker racing kayaks possessed the same tendency, but to a much less pronounced degree. Up stream breezes accelerated the veering; but did riot cause it. I concluded that it was more a matter of under water hull form than the conventional weathervane effect. The habit of pivotting sideways was not the unbalanced yawing action of a hull with too much weight foreward. It was perhaps the price of maneuverlility at the sacrifice of directional stability.

This characteristic with its many subtle ramifications was more of a challenge than a nuisance. Once the habit was recognized you could quickly learn to live with it by touching tlie paddle blade to water from time to time. Hut to analyze the cause and prescribe the cure in another design, without destroying a liull's capacity to turn quickly, was a problem beyond my limited knowledge of design.

We ran many experiments: changing the body position in the hull; overloading the stern with rocks, then the bow; reversing position in the hull and paddling in the opposite direction. None were conclusive. Finally 1 put a small strip of glass on the keel, possibly a half inch wide and a quarter of an inch high, running the full length. The pivotting &-creased in direct proportion to the loss of quick maneuverability. Potentially worse, the keel presented a protruding edge to underwater rocks. Where before, tlie Colorado, even in a diagonal running position, would slip smoothly over rocks, it was nearly capsized many times by that small keel. The keel was discarded. We concluded that whatever the hull shape no kayak should have sharp protruding edges of any kind. The pivotting would have to be remedied, if possible, in tlie design.

During the winter of 1956 tlie Rogue was born. Narrower, faster, with cleaner lines, tlie Rogue might best be described as a transition craft, one that still is essentially a recreation boat, but capable of making a better showing in competition. With a more highly pronounced rounded V to the bottom, very soft bilges, two inches less beam, greater sheer and rocker, liiglier freeboard foreward to cut the waves without diving, the Kogue is Easter and more tricky. It parts the water more gently, slips through with less effort, pounds less in waves, and strangely, has less tendency to pivot than its predecessor.

For the first two or three production models the mold for the Rogue was allowed to retain a sharp V to the keel to offset increase in rocker, the rocker to perniit quick spinning in mid-stream direction changes, the V to provide some directional stability. Then tlie mold was redressed, the sharpness of the V sanded down, and a new model was fabricated. It has not yet been tested.

The alteration was indicated because I felt the Rogue, when going from an edy into swift current, would be grabbed too suddenly by the current, wliere I had hoped for a smoother transition. Rounding off tlie sharpness of the V would tend to reduce the sudden gripping of a

sharper edge by the outside current. Also I. felt that unless you rolled the Kogue up on its side to make a pivot turn, it did not respond to direction changes as well as the Colorado. Again this could be the result of too much sharp V on the bottom. I have observed that even tlie fast and tricky European racing kayaks have lost all tendency toward a sharp V, the sharpness limited to just the bow and stern.

The racing kayaks have somewhat more rocker than they used to have too, though not as much as the Kogue. To turn them quickly you must roll up on the gunwale using a paddle brace. On its side tlie racing kayak has a great deal of effective rocker. Sitting flat in the water it does not turn easily. These are features more desireable for Slalom competition than for recreation cruising, because often in clownriver cruising you drift with the current paddling only when necessary. The paddle brace pivot is not effective with a drifting bat. The hull that will spin quickly with a single paddle stroke, though possibly less effective in competition, can be more effective for recreational cruising, especially in low water where rock dodging becomes a part of the pleasure.

The Rogue has not yet completed its test period. When is does, if the past is any indication, we probably will continue this fascinating, sometimes expensive. hobby of attempting to design an even better hull. The process is dynamic. Like skiing, todays techniques that appear supremely sophisticated will he tomorrow's basic skills. The problems of perfecting designs under conditions of such change in technical kayak handling, become more and more subtle. At this moment, with the incomplete information on tlie Kogue, it is difficult to guess what its successor will be like. Perhaps the only certainty is that it will have its successor, and possibly several after that, representing the combined efforts of two interested enthusiasts in search of a more perfect hull. We hope that other enthusiasts will join us in tlie search.

Sitting on top of a wave,
thr Rogue shows her graceful lines

Peter Stacey

DONN CHARNLEY, Chairma

The Safety Committee of the American White Water Affiliation was set up to promote safe practice among all who enjoy our sport. It might be well to dwell entirely on the pleasures of boating, but the serious side must not be neglected.

In the section below, we report on accidents that took ten lives. These are ten too many. Let us learn from these tragedies, and not make mock of them by repeat performances.

March 30-31: Lake Chelan, Wash.

Two person missing and presumed dead. Accident occurred during a spring-vacation canoe trip on mounain-locked, 60 mile long lake. Their canoe, with *un-used* outrigger lashed inside, found capsized. Last seen three hours before a sudden storm lashed the lake. The boys had life jackets, were good swimmers. Lake is very cold in March.

Conclusion: Inadequate experience for conditions. No support boat.

April 14: Westfield River, Mass.

One man (or person) drowned. Accident occurred while man and another were attempting to "shoot the rapids" in a canoe during high-water stage. Life jackets were worn.

Conclusion: Inadequate training or experience for the conditions of the river encountered. Apparently no support and/or other boats.

April 29: North Branch of the Deerfield River, Wilmington, Vt.

One person drowned. Accident occurred when the canoe in which victim and another capsized while attempting to "shoot the rapids."

Conclusion: Inadequate training or experience for conditions. No support.

May ?: Rogue River — between Gold Beach and Grants Pass, Oregon.

One person drowned. Accident occurred during 1 attempt by victim and two others to make a one day run upstream from Gold Beach to Grants Pass, (97 miles), in an Alaskan River boat powered by a Mark 55 Merc outboard. At mile 60, victim took boat alone to try a short "rough stretch". Hoat filled, and victim inflating his mae west, "*swam ashore easily*". Boat went downstream and caught in an eddy. A companion swam across and secured it. The second companion also swam across at this place successfully. The victim, following his companions at a slow pace, then attempted to swim across. He seemed not to "put out any effort to reach the other bank when the angling current which was helping him across gave out". He was swept downstream; found 73 hours later. Concussion.

Additional facts: Was wearing mae west: was a good swimmer; had swum away from boating accidents in Alaska; did not appear to be suffering from pain or cramps ,and had not been drinking.

Conclusion: While not 1 white-water *boating* accident per se, it seems that this accident graphically points out that any undertaking on wilderness or white-water must be given every possible safe-guard against all hazards. The victim might have been struck by a heart-attack, etc.. while in mid-stream. A potential rescuer with life jacket and attached life line could have been the key, here.

May ?: Merced River, California.

One man drowned. Accident occurred on a fairly "rough" stretch. Victim had been taken at his word as to his abilities and experience in Europe. He could not handle the situation, and capsized. Apparently panicy, he would not let go of his boat, when a rescuer got a line to him. Kescuer could not pull both boat and man to shore, was himself upset. He abandoned his boat and easily made the shore. (Both the above had life-jackets). Victim, upon recovery, showed no marks or bruises, apparently became exhausted and drowned.

Conclusions: Party was equiped for everything but the victim's inabilities. *As so often happens,* a neo-boater will hare a very grandiose idea of his ability.

May 12: French Creek, 12 miles west of Union City, Pa.

Three Hoy Scouts. Scoutmaster missing ancl presumed drowned. Seven others rescued. Accident occurred shortly after five canoes had started down the "rain-swollen" creek on a merit badge-earning expedition. The canoes struck a submerged tree and capsized.

Conclusions: Inadequate training or experience for conditions. Apparently there was no pre-running of the creek to determine what dangers lay in it, and what ability its condition required.

May 28: Colorado River, near Glenwood Springs, Colo.

One man drowned. Accident occurred as the result of an abortive attempt to navigate a *very rough* stretch of the Colorado Kiver just below Shoshone Dam, by three men in a 25-foot rubber raft. The raft capsized at the first rapid, being swung broadside to the curler. One of the boatmen was drowned. Two companions were fortunately swept ashore before they lost consciousness. All wore life-jackets, but at least one had his torn from him in the turbulent water. No other special equipment was used. See *Tragedy* on *the Colorado*, AWW, Winter, 1956.

Conclusions: Complete inadequacy of equipment, training, and particularly of experience. A raft remaining upright depends upon its being kept headed *info* the waves and curlers. Long bow and stern oars are the only method which makes this possible. In waters as rough as these, boaters must wear some kind of head protection. Local white water enthusuasts report that they had long ago ruled out any plans of running this stretch as far too dangerous.

Grand Canyon Safety Rules

AS an example of safety rules, American WHITE WATER is pleased to present regulations of the National Park Service for one of the toughest runs in the world. These eminently sensible rules were supplied by Daniel E. Davis, Supervisory Park Kanger, and member of the Safety Committee of the American WHITE WATER Affiliation.

1. No privately-owned boat, canoe, raft, or other floating craft shall be placed or operated upon the waters of any park or monument without a permit from the Superintendent. (Section 1.59 of the General Kules and Regulations published for the management of the areas of the National Park System.)

A. Because of the hazardous nature of the Colorado Kiver within Grand Canyon National Park and Monument, the following requirements will be considered before a permit will be issued:

(1) Foldboats, canoes, kayaks, or conventional rowboats are considered unsafe on this section of the river.

(2) Rowboats of the Galloway-Stone. Cataract, Improved Cataract,, Sadiron types or variations will be considered.

(3) Neoprene rafts and pontoons of the 10-man size (17' long x 9' across how beam) and larger will he considered. Rafts smaller than the 10-man size such as the 7-man and 5-man rafts are hazardous in the Grand Canyon. In the past, expeditions using these smaller rafts have been involved in excessive risks to life and are considered unsafe.

(4) The number of boats or rafts in the party should be adequate to carry the entire party, without serious overloading, in the event that one of the units be completely wrecked or otherwise lost.

(5) The following shall be considered as the safe maximum loads:

a. 10-man raft—4 people including boatman antl supplies;
b. Cataract-Sadiron-—3 people including boatman and supplies;
. 22' pontoon—6 people including boatman and supplies;
d. 27' pontoon—10 people—including boatman and supplies.

(6) The party should be in the charge of a competent, responsible, and experienced leader who has a good understandin g of the Park Rules and Regulations antl a knowledge of the canyon geographically.

(7) All boatmen should have some fast water experience and at least one of the boatmen or the leader should have had experience through the Grand Canyon.
a. The leader and boatmen must be familiar with the escape routes.
b. Non-swimmers should be discouraged from making the trip.

(8) Each passenger MUST have a jacket-type life preserver, preferably of the Navy type, with collars, that straps around the chest antl between the legs. Some extra life preservers must be carried.
a. They must be worn at all times while on the water in power boats.
b. They must he worn at all times while lining or portaging near rough water.
c. They must be worn through all rapids and riffles in rowed boats or rafts.
d. Yellow Air Force inflatable (Mae West) life jackets and the inflatable belt preservers are neither adequate nor dependable.

(9) Each party should have the USGS charts of the Colorado River (Sheets A through K of the plan of the Colorado River—Lees Ferry, Arizona, to Black Canyon, Arizona-Nevada) ; the USGS topographic sheets of the East and West halves of Grand Canyon National Park (if available) ; the USGS topographic map of Grand Canyon National Monument.

(10) A complete medical kit must be carried.

(11) A signal mirror of the USAF type and a knowledge of CAA ground to air panel signals will be considered the minimum signal equipment.

(I?) A minimum of one extra set of oars (NOT PADDLES) must be carried on each boat or raft. Even if a motor is to be used, two sets of oars must be carried with each unit. Ash oars are preferable.

(13) If using neoprene rafts or pontoons, each unit should have the following:
a. Two air pumps.
b. A complete rubber repair kit.
c. If motor is used on raft or pontoon, an extra motor mount should be carried.

(14) Ropes, maps antl canteen, as well as a knowledge of the escape routes will be considered the minimum escape equipment. It will take a minimum of one gallon of water per person to get from the river to the rim in the summer.

2. Firearms or explosives of any kind arc. not permitted within Grand Canyon National Park or Monument.

3. Fishing is permitted if a valid Arizona fishing license is in possession of fisherman.

4. The destruction, injury, defacement, or removal or disturbance in any manner of any natural feature or object is prohibited. *Particularly*:
A. By shooting, molesting, or attempting to capture, any wild animal, or by picking or gathering flowers or other plants.
B. Hy writing, scratching, painting, carving, or chiseling your name or other inscriptions ANYWHERE.
C. No one is allowed to collect specimens of plants, fosils, minerals, animal life, or archeological objects wihout written permission, obtained in advance, from the Superintendent.

5. Prospecting and the locating of mining claims on lands within the park and monument are prohibited.

6. All camp and lunch sites will be left in a clean condition. Dumping cans antl trash in the river has been found to be the best method of disposal.

(This is true only for heavily silted rivers. Ed.)

SLIDE RULE AND PADDLE

by ELIOT DU KOIS

This isn't just theory!

It is a well documented fact that New England canoeists are predominately backpaddlers, whereas Colorado canoeists and foldboatists paddle forward to achieve control of their boats. This has been atributed to many causes: New Englanders are conservative: Coloradoans arc more clashing, and the Salida race provides a strong stimulus for forward paddling. If you paddle forward on a New England river you may easily be moving over the bottom three times as fast as yon would if you were backpaddling. If a portion of the bottom sticks up and whallops you, as often happens, the whallop will be nine times greater. On Colorado rivers there are souse-holes, and forward paddling ploughs through them.

These are all good reasons, but recently I wondered whether there might he some simple and basic relationship of river velocity and boat speed which makes one technique more favorable in one section antl another technique favorable in another section. I dragged out scratch paper, trig. tables, and slide rule. This is what I got:

$$\frac{d}{r} = \frac{P \sin A}{V + P \cos A}$$

where:

P is paddling speed as timed in still water,
V is river velocity
A is the angle at which the boat is pointed with respect to the current
r is the recognition distance, how far away you see something you wish to avoid
d is the dodging distance, how far you are able to move the boat to the side by the time you come abreast of the obstacle.

The object is to achieve the greatest possible dodging distance for a given recognition distance: that is, you try to make d/r as large as possible. Examination of the equation shows that increased V, river velocity, always works against you, and increased P, paddling speed always works for you. This relieves you of the decision as to how fast you should paddle. If you really want to miss something, paddle full speed. The only things you have to worry about are: in what direction to paddle (angle A) and whether to paddle forward or to backpaddle. You can get the answer using the equation. Hut first a word of warning: for backpaddling, don't forget to make P negative. You will end up with a negative d/r, hut this is just Mathematics' way of telling us that if we point the bow left and backpaddle, the boat will move toward the right bank.

If you're right behind me, let's try some specific manuvers and evaluate them with the equation:

You are on a New England river which has a velocity of ten feet per second (6.8 mph) and you see a nasty drop 100 feet ahead. You incline your bow toward the bank at an angle of thirty degrees, and you paddle forward full speed. Your

Eliot Dubois

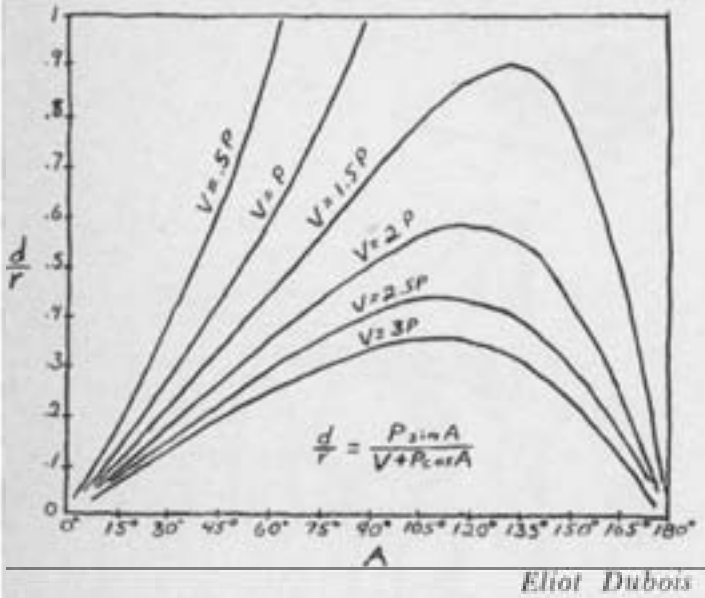
Now with your Boston friend you move to Colorado and try a river moving 30 feet per second. With all other conditions the same, your dodging distance is thirteen feet while your backpaddling friend is only able to dodge by ten feet.

So there you are. Of course, this is just one example. Other dodging distances result from other choices of angle A, other river velocities ,and other paddling speeds. However, if you assume the ability to paddle forward at a greater speed than you can backpaddle, you'll find that the equation favors forward paddling on fast rivers and backpaddling on slower rivers.

The questions that now come to mind are: "If the river is going three times as fast as I can paddle, is thirteen feet all the dodging distance I can hope for? Is 30° the best angle? If not, what is?" To answer these questions I've provided a graphical solution of the equation, plotting d/r versus A for six different ratios of river velocity to paddling speed. You can see that 35 feet is the maximum you can dodge in 100 feet for a river velocity three times your paddling speed. To achieve this you have to swing your boat through nearly 120 degrees and "up ferry" across the river. This angle is a good compromise for getting very nearly the greatest dodging distance for a wide range of river velocities.

Of course, the above ignores problems of turning time, vulnerability while broadside, and your ability to paddle full speed while looking over your right or left shoulder. I am sure that these things would yield to a mathematical analysis, but—some other time. Meanwhile, I hope you gentlemen from Colorado will take your slide rules, trig tables, and plenty of scratch paper next time you run Cottonwood.

* * *

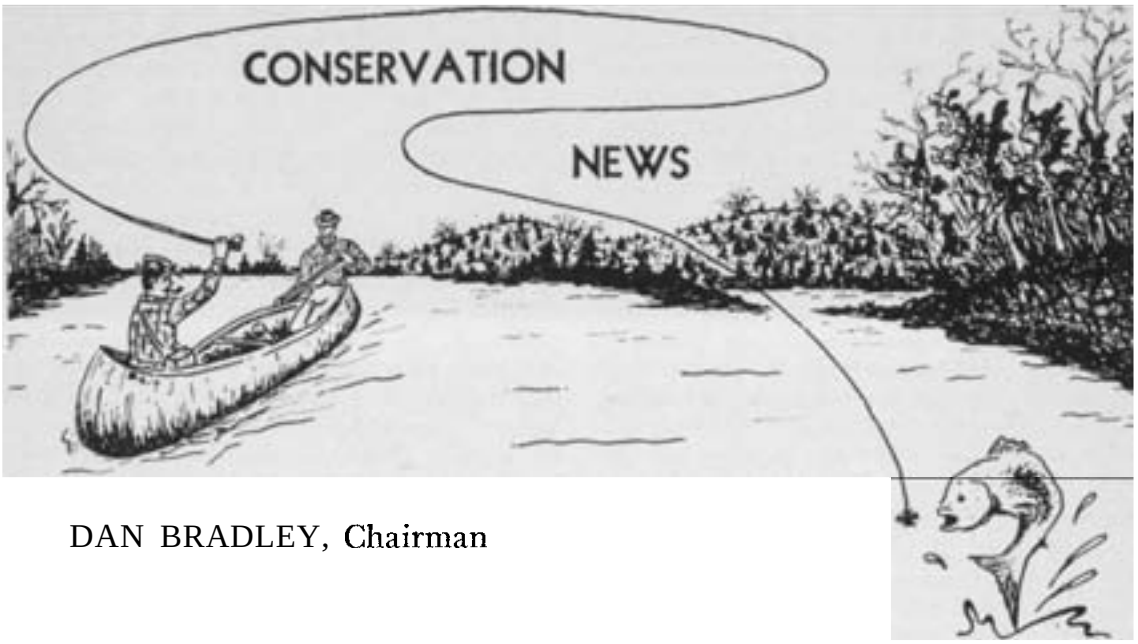


Eliot Dubois

NEW RIVER CANOEING MANUAL

We wish to report another step forward in the preparation of white water literature. Under the Editorship of David B. Mayer, the Southeastern Pennsylvania chapter of the American Red Cross and the Buck Ridge Ski Club have published a *River Canoeing Manual*. The first draft arrived in our offices this summer. Included is information on equipment, paddle strokes, teamwork, cruising, reading fast water, safety ,rescue, and teaching. There is an appendix on slalom and Pennsylvania rivers.

It is not known whether this is yet available for the general public. However, interested persons should write the Ruck Ridge Ski Club, c/o Robert McNair, 32 Dartmouth Circle, Swarthmore, Pennsylvania.



DAN BRADLEY, Chairman

Hearings on the Wilderness Preservation Act were held June 19-21 before both Senate and House committees. There was of course ample opposition from cattlemen, power and mining interests who want our wilderness for their own exploitation and therefore argue that "uranium for our atomic stockpile is more important than a wildlife refuge"! From some newspaper accounts one would think nobody else attended the hearings, but you can be sure Conservationists were well represented! "The hearings produced a wonderful record," says Howard Zalinniser, Executive Secretary of the Wilderness Society, "and events are progressing at a pace beyond our expectations."

The current issue of *The Living Wilderness* is devoted to the Wilderness Preservation Act. and assembles in one volume considerable pertinent material. In addition to the text of the bill and a map showing location of wilderness areas designated in the Act, it includes discussions by Rep. John P. Saylon, (R, Pa.), Sen. Hubert Humphrey (D, Minn.). and Howard Zahniser, and also opposing argument by Richard W. Smith of the U. S. Chamber of Commerce and quite a number of newspaper editorials, both pro and con.

The nub of Mr. Smith's argument seems to be the concept of "greatest good for the greatest number of people"—a seemingly lofty principle frequently advanced by those who want to deny a public facility to the people. Hut I think it is a false philosophy: in a democracy we do not provide for the majority to the exclusion of the minority; rather we seek to provide, within reason, for the needs of *all* of our people, in proportion to the number requiring them.

The opposition seeks to make much of the notion that "multiple use" of areas included in the Wilderness System would be permanently prohibited. Since the Act makes no changes in administration, this argument seems fallacious. The Act supports present administrative regulations which discourage "multiple use" incompatible with wilderness: an ordnance firing range is not the best use of a wildlife refuge; unlimted logging and mining and grazing are destructive of natural environment. The Act established procedures for continuing review by the Wilderness Council, and by making changes possible only by Act of Congress it does relieve administrative directors of political pressure from commercial interests and makes raids upon our wilderness more difficult. That's probably what the opposition means.

through those areas which are roadless. The steep-walled, timbered slopes and beautiful crystal-clear mountain waters [of the Clearwater Canyon] will be appreciated more with the passing of the years." This sounds like the Clearwater is our kind of river, and we should not care to see it unnecessarily destroyed. The proposed dam at Bruce's Eddy would not only flood out the river but also the winter forage area for the largest elk herd in the world. Private power interests consider the dam necessary to supplement the three private dams in Hells Canyon—a project now sizzling in Congress—but we are informed that other alternatives less destructive to scenery and wildlife are available.

* * *

From Grant Conway, AWWA member in Washington, comes a report on the recent hearing held by the National Capital Planning Commission, at the request of the Hon. James E. Murray, Chairman, Senate Interior Committee, on relocation of the proposed memorial parkway away from the quiet riverside woodlands along the Chesapeake and Ohio Canal. As an example of what Conservationists are up against, it bears some comment. The Commission includes representatives of National Park Service, Bureau of Public Roads, Army Engineers, and real estate interests—people hardly predisposed in favor of preserving areas of quiet woodland and recreation in a metropolis. The agenda was rigged to give opponents of relocation last say (and double time at that), with no opportunity for Conservationists to rebut gross misstatements or distortions of fact. Indeed, the Commission originally attempted to limit testimony only to landowners in the affected area, and so eliminate Conservationists entirely! The spectacle included giving ample time to an elderly lady, representing nobody but herself, who read her own poetry, talked about the birds and the bees and the flowers, and put on an effective burlesque of the batty butterfly-chasers—to the ostensible amusement of the Commissioners. At the same time stories were given out to the press outlining proposed alternative routes for the parkway which were violently destructive to local landholders and quite impractical, causing a rush of support lor the present route. This is presumed to be an impartial hearing before a federal agency concerned with the administration of public affairs in the nation's capital! It is just possible that it may blow up in their faces, for the C. & O. Canal is becoming a "cause celébre" far beyond its local importance, and such a farcial hearing may serve only to intensifv the battle.

Some of us also know the story of the Bureau of Reclamation's arbitrary action in closing Glen Canyon (now happily reversed), and how when challenged they released a flood of false propaganda in the press about non-existent danger from blasting, rock slides ,etc. These two instances illuminate the tendency of some government bureaus, when publicly questionetl as to motives and objectives, to resort to all kinds of underhanded chicanery in support of their predetermined position.

Private industrial and commercial interests have the money, the organization. and the power to throw their weight around. Too many can see in our undeveloped areas only board feet and kilowatt hours—and real estate "improvement". We, the people, have only our numbers—and our votes. To preserve our outdoors—our national parks, our forests, our wild areas—for those who follow us we need organization, and we need volunteers. How about **you**, dear reader—will **you** help?

The New Library Committee

To extend A. W. W. A.'s service to its members, a library committee has been set up. Chairman is John Geert, 5686 N. Ridge Avenue, Chicago 40, Illinois. John is going to keep track of books and magazines on our sport. In particular, he will have a file on all foreign magazines received by A. W. W. A.

Sneezing up North
Always, it's July the Fourth
In the lovely land of Florida
Sunny Florida by the sea."

The canoe cruiser is better equipped to enjoy the beauties of the sub-tropical wonderland that juts out into the Carribean than any other type of traveller. An all-wise Creator endowed this place where Summer lingers through the Winter with 6,500 miles of streams, 30,000 lakes and 1,200 miles of beach caressed by the opalescent waters of the Gulf Stream.

One will not find the roaring torrents of rapids walled in by canyons here. That sort of scenery doesn't fit with a climate where the air caresses one with a velvet touch and the lazy blue heron flies in slow motion. Streams are not limpid, but lull bodied and tortuous with a gorgeous new eyeful of scenery around every curve.

The water in the streams is of two types. Numerous springs of crystal clear water issue from subterranean grottoes as full grown streams, flowing until they swell other streams with their scintillating flood. One of these, Silver Springs, is the second largest in the country. The other type of water, which is the redundant moisture of the land, was described by Major Raven-Hart, an English canoeist, as being the color of sherry. Loyalty to the world's best known beverage, conceived in the South, would lead the writer to identify the water as being the color of Coca Cola. This color is caused by the tannic acid from the tree roots. In the old sailing days. this water was highly esteemed because it could be carried in casks for over a year without getting ropy. It reflects the blue of the sky well and produces splendid photographic effect in color.

using a trailer. The rendezvous is set for 6:00 A.M., near the city limits. Twenty-five show up in six cars with the Commodore serving as cruise master.

The starting point is Ichetucknee Springs, fourth largest boil in the state and 75 miles from Jacksonville. Alice Zelenka, the Commodore's wife, was born in this vicinity and she guides us through the woods trails to the spring, after we leave the paved road. Years ago, Indians came to this spot and camped, a fact evidenced by the large number of arrowheads found in the vicinity.

Those going on the cruise are ready to "shove off" by 9:00 A.M. There are children and wives in the party with paddling papas and also romantic couples. The drivers. who are friends that like a day in the open but may be too lazy to supply their own locomotion, linger at the spring for a swim in the waters which are 70 degrees year around. They will meet us for lunch and later on, further down stream for the trek back to Jacksonville.

Ichetucknee Run is sever; miles long and varies from about 50 feet to an eighth of a mile in width. Vegetation is dense on the hanks. Sometimes the bottom is sandy and shallow, at others it is deep cut in the coral rock. Blue Springs, so named because the coral bottom is a light blue, adds to the volume of the run. The bones of a mastadon were found at this point several years ago.

photographer unknown

Fish dart through the eel grass and turtles, alarmed by the noise of the approaching aquacade, drop from their solarium on logs, hitting the water with a loud "splash"! A number of colorful water plants and marine grasses stroke the bottoms of our canoes. Spider lilies, bonnets, blue iris, wild honeysuckle, and snow white cherokee roses grow near and on the banks. Wild orchids are not uncommon. Gannets and herons wheel overhead. The close observer may even spot a few snakes, water moccasins included.

Half way down the run, we pass under the Branford road bridge, do a little maneuvering to miss some oak logs imbedded in the bottom and wish that it were time for lunch when we spot a shady grove. The stream starts to widen and we knew we are approaching its confluence with the Santa Fe River when a number of cypress trees appear on the left bank, their expanded boles, looking like Southern belles in hoop skirts.

A strange phenomena appears where the streams join. The Santa Fe is dark water and the Ichetucknee is crystalline. The two flow side by side for a quarter mile, refusing to blend, then the wedding takes place with the Santa Fe predominating. About eight miles down stream, there is a beautiful concrete bridge on the Bell-Branford road. Our drivers meet us here for lunch. Dan Patterson decides to do a high dive from the bridge for an appetizer and one of the party decides to photograph him in color, just as he springs. All of us laughed as the shutterbug clicked his camera and then put it under a poncho hastily to avoid the splash as Dan hits the water about five feet to starboard.

Some take a short nap after lunch and others rag the food faddist who eats a big bunch of celery and several carrots for lunch. After reembarking, it is only a two mile paddle to the Suwanee, made famous by Stephen Foster's immortal folk song. Just before we glide into the Suwannee, we stop to photograph an unusual cypress tree with an 18 foot canoe alongside, the bole of the tree overlapping the canoe at both ends.

Eleven miles, "Way down upon de Suwannee Ribber" remains to be paddled at a leisurely 400 strokes a mile. Greetings are exchanged with fishermen spond politely to our query "A Outcroppings of pitted limeston pink in the setting sun intri interested in geology and ph A stop is made to explore a sm and some sink holes. One of active youngsters climbs out branch of an oak tree where an unearthly yell, beating on in imitation of Tarzan.

The water part of the trip hand operated ferry between Fletcher. Canoes are soon lash cars and a genial ferry-man all of the party to pull themsel round trip on the last ferry cr Suwannee. Many sleep while t handle the return to the Semin Club on Ortega River. None of need bromides to induce sleep a on the water trails.

Another Technical Le

Dear Sir,

We read in a recent issue helpful advice to Nig-Nog or of drip rings. We wonder if yo cal department could be so k tell us where we are going feathering of our paddles. We obvious choice of tar as adhesiv hands get in such a mess when a paddle.

(

Dear Mr. Gon-Gin

Our technical department is only too pleased to be able to as is a common trouble with begin is probably the best adhesive but this goo may have been appl out. However it is more likely have erred in the feathering. T side of the blade must be cov down, and the lower side covere —any good swan upper will su but be sure to specify a water- riety, BSS 1088 for example. will require especial attention o warp and woof.

Tec

(Reprinted with pleasure fro Water (British)).

• • •

Patronize the firms who adv your magazine.

PHOTOS – FOR AMERICAN WHITE WATER

Good photographs make or break a story in our sport To this end we offer some advice on what to submit with your articles. Usually you are the only one who can illustrate your story, and we hate to hold your manuscript while searching for a picture from someone else.

Snapshots are good for the family album. Hut as a general rule, something better is needed for magazine reproduction. In the process of reproduction, both the detail and the tone range of a photograph take a beating. Therefore, the picture has to be good before it starts the reproduction process.

We want good 4 x 5 or larger (glossy prints) and they should be in sharp focus. Subject matter should occupy the major area of the print.

Photographic reproduction cuts down the tone range of any photograph. The best solution is to have a print that is over-contrasty. In a print for home use. the paper contrast should be chosen so the shadows use the blackest the paper will give, and the highlights use the whitest the paper will give. Experience has shown that you get better reproduction from a print that is made from the next grade of contrast beyond the one which gives perfect visual reproduction.

There is a constant problem in identifying pictures that have been sent in. Please take a separate piece of paper and write on it, the title of the photograph, the names of the people in the picture, and the name of the photographer. Then scotch tape this to the back. Direct writing with pencil is likely to show through, unless carefully done.

All of us agree that a picture is worth ten thousand words. However, this is true only if it is a *good* picture.

PLEASE SEND IN YOUKS.

Rene Fonck opens his mouth as he dives into a haystack in Tincup on the Arkansas.

Miggs Durrance

BOOK REVIEW

DANGEROUS RIVER

by R. M. Patterson

Published by William Sloane Associates, New York.

Reviewed by William L. Bewley

In 1927, R. hi. Patterson was lured from London by a desire to see a region which was almost unknown: the Nehanni River, one of the headwaters of the great Mackenzie River, in the North West Territory of Canada. His book is a story of enjoyment of the wilderness, told in a straightforward manner, well written, and with no romanticizecl heroics. He says: "We travelled because we liked the life—and, of course, hoped to find, buried at the end of the rainbow, the crock of gold .... For the rest, we left that lovely country as we found it."

He went into this wilderness twice, the first time alone. Much of his travelling was by canoe, under circumstances where a mistake or an unforeseeable accident meant disaster. Single handed, he took his loaded canoe upstream by trackline, for a distance of 130 miles.

"... the water was very fast, and it was rock strewn, and there were no good tracking beaches, only piled up talus slopes and great misshapen blocks of stone, tumbled from the canyon wall and wet from the waves. Over these one clambered, trackline in hand, tearing trousers, bashing shins, while the canoe, riding upstream, did its best to throw one off balance, or to whirl end for end as it raced up in an eddy on a slack line and then sheered out into the current."

His book, a personal account of a period of his life, contains much in addition to canoing and river travel, but his point of view will be appreciated by river tourers: "There is something beautifully final in certain phases of river travel: you make your decision and-pick your course, and after that the rest is all action. You are commited and there is no turning back—you must make it or swamp. The result is a supreme peak of physical effort and a split-second awareness of changing water: and mentally a sort of cold excitement and exhilaration—a high point of living. ..."

Notices of Cruises and Races

As a service to boaters in America, we would like to carry notices of every single cruise and race. However, there just isn't enough space to carry all the information. Therefore, we have a policy of reporting on all clubs that sponsor cruises; and reporting on the major races in each area.

For these notices to appear in the Winter (February) Issue, all information must be in the hands of the Secretary of A. W. W. **A.** by January 1st of that year. In the case of cruises, please give the name of the sponsoring club, the area cruised, and who to get in touch with. In the case of races please g,ve the name of the race, date, sponsoring club and whether the race is A. C. A. sponsored or professional.

It will be appreciated if any organization sponsoring the races or cruises will act immediately and send the information to Harold W. Kiehm, 2019 West Addison Street, Chicago, Illinois.

* * *

NEW GERMAN FILM

The Klepper Company has a new film entitled "Wild Wasser." It is a 16 mm color, magnetic sound, and English on two 2.000 foot reels. It runs for about 1½ hours and it is very suitable for public showings. Accordingly, to people who have seen it, it is a very good movie. It is available for a short time only through Kleper Company, 1472 South Broadway, New York, Sew York.

* * *

HELP NEEDED

This year America sends its first contestant to the International Slalom Championships. While Dick Stratton is paying much of his expenses, readers are urged to chip in with some help. Send money to AWWA 601 Baseline, Boulder, Colo., and mark it "International Slalom Fund."

root! It may dampen our wearing apparel on our way to and from our daily occupation but our spirits take wings to those favorite streams where the week-end sees us surveying such "white-water" as never before!

HAVE YOU BEEN AT IT?

YOU MOST CERTAINLY HAVE if you are like other AWWA men! For not only have our Affiliate Clubs found unexcelled oportunities to conduct full Spring and Summer programs of which even Aquarious would be proud, but also groups of individuals have taken advantage of unusually high-water conditions.

If there is such a thing as a "summer lull" during vacation-time, it offers a bit of a "breather" in which to reflect upon how wonderful it is to be associated with an active, nation-wide group of outdoorsmen, each individual of which is as much interested as YOU ARE, and just as enthused, about the rare pleasure found in river-riding! Ours, the greatest sport on earth, is on water, and it may be considered less a "sport" than it is purely and simply an everlasting adventure. By nature we are a freedom-loving, independent and determined lot, uniquely enjoying in each other's company that almost-lost affinity for the natural out-of-doors which today can be had nowhere quite as completely as on . . . America's Rivers. Let us constantly seek to enhance the comparatively-rare spirit of cameraderie to be found without parallel among the river-riding fraternity!

Every member of our unusual and constantly growing aggregation is urged to communicate with the Secretary who is custodian of a vast source of invaluable information and know-how upon which to draw, be it for the purpose of helping you organize your own local group, directing you to an already-functioningnctinig Club or TOO, can most productively be employed on the several tremendously interesting Committees offering you golden opportunities to use your resourcefulness for even greater enjoyment of the sport. Indeed, this Affiliation is based on the *co*-operative principle that all members contribute their help and ideas over and above the trivial dues. SHARE YOUR EXPERIENCES by describing them to: Dave Stacey, 601 Baseline Road, Boulder, Colorado.

Our Executive Committe is made up informally with a view to representing each part of the country and each major club. It now consists of:

Wolf Bauer, founder of Washington Foldboat Club
5622 Seaview Avenue, Seattle 7, Washington

Eliot DuBois, Boston AMC., founder of AWWA
Sandy Pond Road, Lincoln, Mass.

Rruce Grant, The Sierra Club, 1955 Secty of AWWA
6255 Chabot Road, Oakland, Calif.

Dr. Lawrence Grinnell, Ithaca Canoe Club, Author of canoe guides
710 Triphammer Road, Ithaca, N. Y.

Dr. Oscar Hawksley, Vice President, NSAS
Central Missouri State College, Warrensburg, Missouri

Clyde Tones, Colorado White Water Association
2565 Poplar Avenue, Denver 7, Colo.

Harold Kiehm, Canoeing Chairman, The Prairie Club (present Sec'y of AWWA)
2019 Addison Street, Chicago 18, Ill.

Rob McNair, 1956 Secretary of AWWA, Buck Ridge Ski Club
32 Dartmouth Circle, Swarthmore, Pa.

Maurice Posada, New York Council, AYH
174 Waverly Place, New York 14, N. Y.

(over)

CLUB ACTIVITIES (Cont.)

Ernie F. Schmidt, Director of Camping
SCHIFF Scout Reservation, Mandham, New Jersey

Dave Stacey, Editor, American White Water
601 Baseline Road, Boulder, Colo.

The AWWA is replete with admirers of the good work the AWWA is doing. Can you imagine how much more widespread and effective the good work would be if every one of "the admirers" considered himself on the committee of his choice where he could acquire a real, deep-down sense of satisfaction in helping to accomplish or further the Committee's purposes? A line to the Executive Secretary, designating the Committee of your choice will be welcome indeed!

Advertising Committee
Henry Berce
1576 S. Meade, Denver Colo.

Circulation Committee
(See "Membership')

Conservation Committee
Dan K. Bradley, Chairman
5 West 63rd St., New York 23, N. Y.

Editorial Committee
(See "Publications")

Films Committee
William Rechmann
Country Line and Gulph Creek Rds.
Radnor, Pa.

Guidebook Committee
Chairman to be announced

Library Committee
John W. Geert, Chairman
5686 North Ridge Ave., Chicago 40, Ill.

Membership Committee
Clyde Jones, Chairman
2565 Poplar Avenue, Denver 7, Colo.

Public Relations Committee
Chairman to be announced

Publications Committee
Dave Stacey, Chairman
601 Baseline Road, Boulder, Colo.

Safety Committee
Don Charnley, Chairman
1420 East 56th St., Seattle 5, Wash.

Regardless of your location you can find a most rewarding outlet for your enthusiasm by pitching in on one of these Committees. Right off you'll feel a more integral part of The Affiliation and there'll be great satisfaction in knowing you are one of "the do-ers!"

These clubs are collaborating in 1957 in financial support of the promotional work of the AWWA:

Appalachian Mountain Club, Boston Chapter,
John W. Nevins, Jr., White-water Canoeing Chairman
J. A. Andrews St. Jamaica Plain, Mass.

Appalachian Mountain Club, Hartford Chapter,
Gardner W. Moulton, Inter-Chapter Chairman of White Water Canoeing
286 Farmington Ave., Hartford, Conn.

Buck Ridge Ski Club,
Donald Rupp,
3766 Woodland Ave., Drexel Hill, Pa.

Colorado White Water Association
Roy Kerswill, President,
1760 Magnolia St., Denver 20, Colo.

Foldboat Club of Southern California
Ed. E. Simmons
455 South Oakland Ave., Pasaden 5, Calif.

Ithaca Canoe Club
Dr. Lawrence Grinnell
710 Triphammer Road, Ithaca, N. Y.

Prairie Club of Chicago
Harold G. Kiehm, Chairman Canoeing Committee
2019 Addison St. Chicago 18, Ill.

The Sierra Club
Bruce Grant,
6255 Chabot Road, Oakland 18, Calif.

Genuine pride in being a member of the AMERICAN WHITE WATER AFFILIATION is evident through the increasing number inquiring for an AWWA Seal or Insignia. It must be admitted that as of now there is no AWWA escutcheon or totem, but hundreds of AWWA members are bound to have ideas as to what form it should take. Already there have been suggestions that a cloth "shoulder patch" would be desirable. There is talk about a "decal." Some would like a burgee. Whatever form the emblem may eventually take, this is an open invitation to those interested to get busy with their pencil and paper and draw or describe what they have in mind. Send it to our Secretary, Harold Kiehm, 2019 Addison Street, Chicago 18, Illinois, who will put 'em all through "the meat grinder" to see what comes out!

Grumman

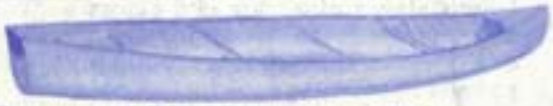
WHITE WATER is the NATURAL HABITAT of GRUMMAN CANOES

Grumman 15 Footer: Lightweight—53 lbs. Standard—68 lbs.

Grumman 17 Footer: Lightweight—62 lbs. Standard—76 lbs.

Grumman 18 Footer: Lightweight—74 lbs. Standard—86 lbs

Grumman 20 Footer: Standard only—114 lbs.



Grumman 17 Foot Square Ender—87 lbs.

Grumman 19 Foot Square Ender—116 lbs.

Write for the FREE new GRUMMAN Boat & Canoe Catalog, 24-pages colorfully illustrated. We will also send you the name of your nearest GRUMMAN Dealer.

GRUMMAN Aluminum Canoes take to white water with the sureness and agility of a salmon. They are built to take it—designed for fun and engineered for safety.

GRUMMAN Canoes are easily portaged and can be transported on car top. Flat bottom design for shallow draft, rides over shallows and riffles with ease and safety. All 12 GRUMMAN Canoe Models have ample Styrofoam flotation compartments built in.

Special Reinforced White Water Models Now Available.

Tough aluminum hulls with heavier rib, keel and gunwale reinforcement supply the additional strength needed for white water. Write for information.

Versatile GRUMMAN Canoes can be equipped for paddling, rowing, sailing, or for cruising with outboard motors. GRUMMAN Canoes are tough and durable—eliminating expensive maintenance and repair costs. GRUMMAN Canoes are the choice of white water experts—responding easily and safely to the challenge of rough water.

Increase your White Water fun to the maximum! This year, Go GRUMMAN . . . A GRUMMAN Canoe is *always ready* for service.

GRUMMAN BOATS, INC.

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