


American **WHITE WATER**

JOURNAL OF AMERICAN WHITE WATER AFFILIATION



Spring 1957

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AMERICAN WHITE WATER

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The American White Water Affiliation

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Volume 3

Number 1

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

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

Printed in the United States of America

COVER—Starting young. Bobby Kerswill on the South Platte. Photo by Roy Kerswill.

The American White Water Affiliation

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

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

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

OUR PURPOSE

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

OUR PUBLICATION

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

MEMBERSHIP

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

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



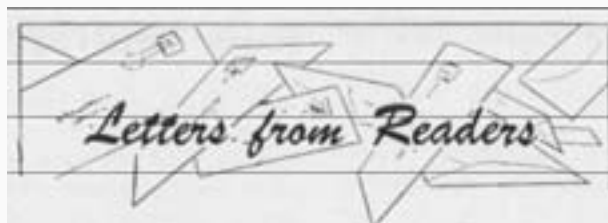
Type of boat preferred: _____

Boating club membership: _____

Suggested articles: _____

(OVER)

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



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

In ~~this~~ issue we ~~are~~ pleased to present a series of letters from Great Britain. As ~~you~~ have reported, their excellent mngnzine (White Water) ~~contains~~ many articles of interest to Americnn Boatmen. There ~~has~~ been a real friendship between the staffs of the two magazines. Our Membership Chairman Clyde Jones arranged fo have copies of American White Water distributed to the renders of British White Water. Many of these lettters are in response to this action.

Dear Mr. Jones:

I am a reader of the British White Water. In the winter edition it advertised the AWW and we were told to send our subscription to Rill Emm, then write to you to tell you to send the magazine.

I ~~was~~ very interested in your magazine. It seems that it contains something for all canoeists. Our British WW is only for people who are interested in WW in my opinion. I am actually a Plat-racing bloke, who is slightly interested in WW events. Rut I was intrigued by the articles in your magazine.

Awaiting the next edition with interest.

Tony Saunders
1 Rothsay Place
Bedford, England

Dear Mr. Jones:

I am a regular reader of White Water and was very pleased to receive a copy of AWW with the latest edition. I have just read your journal and gained the impression that it is run by enthusiasts. It is for this reason that I have accepted your generous offer of AWW and have sent my subscription to our Rill Emm.

I was very pleased to read the article by Steve Bradley on Hull Design as I think that this is a deficiency in information available for the amateur kayak or canoe designer.

It is with great eagerness that I look forward to your next issue.

C. J. Hawker
36, Upper Cranbrook Road
Hristol 6, England

Dear Mr. Jones:

My husband and I have received, along with our copy of White Water, your magazine, "American White Water," and whilst we have not, as yet, had time to fully read and digest it, we are sure we shall find it every bit as interesting as our own. I liave, therefore, sent off \$2.00 to Rill Emm as a year's subscription for your magazine and am writing you, as requested, to let you know I have done so.

Wishing you fair weather and good canoeing always!

Jean McLean
26C Ainslie Gardens
Perth, Scotland

Dear Dave,

I take great pleasure in telling you that we had our first meeting last week. I think you fellows have been waiting for some news about our "grounding" meeting. Mr. Wilkins—who represents the Tyne Foldboat Company—and Bert Oldershaw—Olympic representative of Canada—and myself have been working pretty hard to get a few fellows together and to form a club. Well, last week we got together in the clubroom of the National Yacht Club. There were about 50 fellows and about 10 girls, (also, the Secretary of the Canadian Canoe Association and three representatives of Canada's Olympic canoe team). After a short introduction and explanation of the club's purpose by Mr. Oldershaw, Mr. Wilkins spoke on the advantages of having a club, etc. Then we had a showing of my two movies. One shows putting together

a foldboat, rapids, camping, etc., and the other is a "Day on the River" from dawn to sunset. (Mostly white water stuff). I have given running commentary with a little bit of humor here and there. Then I explained the AWWA and distributed the "count me in" cards so don't be surprised if you get a few subscriptions from Toronto.

Your last issue was tremendous, just keep publishing plenty of pictures! As far as the international scale for grading difficulty of rivers, why don't you show a picture at each grade of rapid? It would stay in everyone's mind much longer than a long description.

We would like to send someone to compete in the Salida race. Is it true that only American citizens can compete? Why? Would you please send us information on that?

Now here are some suggestions that you could publish in the magazine.

1. When getting into a kayak from knee-deep water, all the water is dumped into the boat. I can cut a slit into the heel of my (running) shoes, and before getting into the boat I hold my foot horizontal for 4-5 seconds while the water pours out. Works well.

2. It's easy to lose a duffel bag on a portage. I paint them different colors (say national colors) then I only have to count off red, blue, white, etc. Numbers can also be used.

3. I put talcum powder inside the rubber hull of my kayak. It makes it easy to slide the wooden parts in when assembling.

4. Sometimes a rapid is so long that it is impossible to portage the food, sleeping bags, etc., as we usually do. The nearest highway is about 2 days walking distance (in the worst case) so just in case I tip over I carry an "emergency pack" strapped to my belt. It is in a waterproof bag and requires little room. Just enough food is provided to keep my morale up and to give me energy.

Good luck to you and your magazine!

George G. Siposs
80 Clearview Heights, Apt. 207
Toronto 10, Ontario
Canada

From Your Editor

Here we are at the start of another year of publication. I believe that your staff can look at the past with a certain pride of accomplishment. Our task has been to bring together and inform the members of the American WHITE WATER Affiliation. Considering the thousands of miles that separate our scattered members, we have done pretty well.

Much of the credit belongs to our original editor, Joe Lacy. With the support of a loyal and enthusiastic group in Denver, he started the magazine, and saw it through its growing pains. Your present editor took over when Joe started carrying two jobs at one time.

Looking forward, the future appears bright. We have an enthusiastic membership that supports us far beyond a passive reading of the Journal. There is a hard working staff that really pitches in and delivers the goods. There are the usual money problems—but who doesn't have them? Our authors are doing very well for us, with more manuscripts coming in than we can possibly publish.

This brings me to my favorite item of complaint—we need more good photographs. Good illustrations are the heart and soul of our Journal. Yet often I get a manuscript with lots of reader interest—and poor or no illustrations. Let's rise to the challenge, authors; help tell your story with topnotch pictures.

In selecting articles, I try to strike a balance between the various facets of our sport. Yet often one side gets neglected because no one writes decent articles about it. It is hard to write (and illustrate) a cruising story. But there are many fabulous stories left untold. With two exceptions, the great river runners of the West have yet to send in stories. Now about it, boys?

In New England, the season started long ago. But in Colorado we're just getting started. Your staff is eager to dip a paddle—so don't be surprised if we get behind in our homework.

Dave Stacey
Editor

American WHITE WATER



ADVENTURE ON THE INDUS

by DON HATCH

One of the top Western river guides tells of a fabulous expedition

OUR trip to Pakistan was both successful and tragic. It was successful in that we navigated some of the roughest sections of the Indus River in the Himalayan Mountains. It was tragic in that one man was drowned when one pontoon tipped over while the crew was completing a motion picture. Kiver running on the Indus was as rugged as climbing the famed peaks from which the river roars.

In the beginning our trip was rushed because monsoon weather threatened to stop all travel through the mountains and certainly make pictures impossible. So we fought weather, worn-out planes, visas, heat, disease, poor food and many other things besides the Indus. Boats, motors, crew—the whole works had to be flown into the heart of the Himalayan Mountains before the river trip could get started. Road travel was out of the question due to storm, distance, and in most cases just no road. So we chose planes—DC-3's that landed in mud and rain. A motor konked out on one plane, but the crew re-loaded and tried it again

after limping back to the base in Rawalpindi. Second try we made it. Needless to say, by this time we felt we had set some sort of record—and still we hadn't launched our boats. Adventure was merely starting.

Our first encounter with the Indus was on a 35 mile stretch above the village of Scardo. We bounced our equipment via jeep upriver to the launching site. (The driver was originally a camel driver—at least he drove the jeep like one). Camel caravans enroute to Tibet frequently blocked our path, so we were unable to start the trip that day.

Next day as we launched our boat, I noted the volume of water was at least four times greater than flood stage on the Colorado River. Below us about 400 yards the Indus entered a canyon and disappeared into its dark depths.

Our boat drifted into the canyon. All members were tense. Stew Bradley's map flashed before my mind (Steve was a "good scout" and had previously made a trip to Pakistan ahead of us to scout and

The Indus looks so placid at launching



the river. Because of Steve and his excellent map we felt much more assured of success.) Around the first bend we encountered rapids immediately. The noise seemed to shake the canyon walls. I did a lot of shaking too. Thank God, I had memorized Steve's map. We had no chance now to haul it out for a peek, for the river moved with the swiftness of a small stream. To use Dr. Harold Bradley's expression, "those rocks certainly were moving upstream fast." Our rapid instinct took over almost completely. Dad (Bus Hatch) and I operated in unison, he on the oars, I on the motor. No words were necessary. Each knew what the other was doing; each worked together.

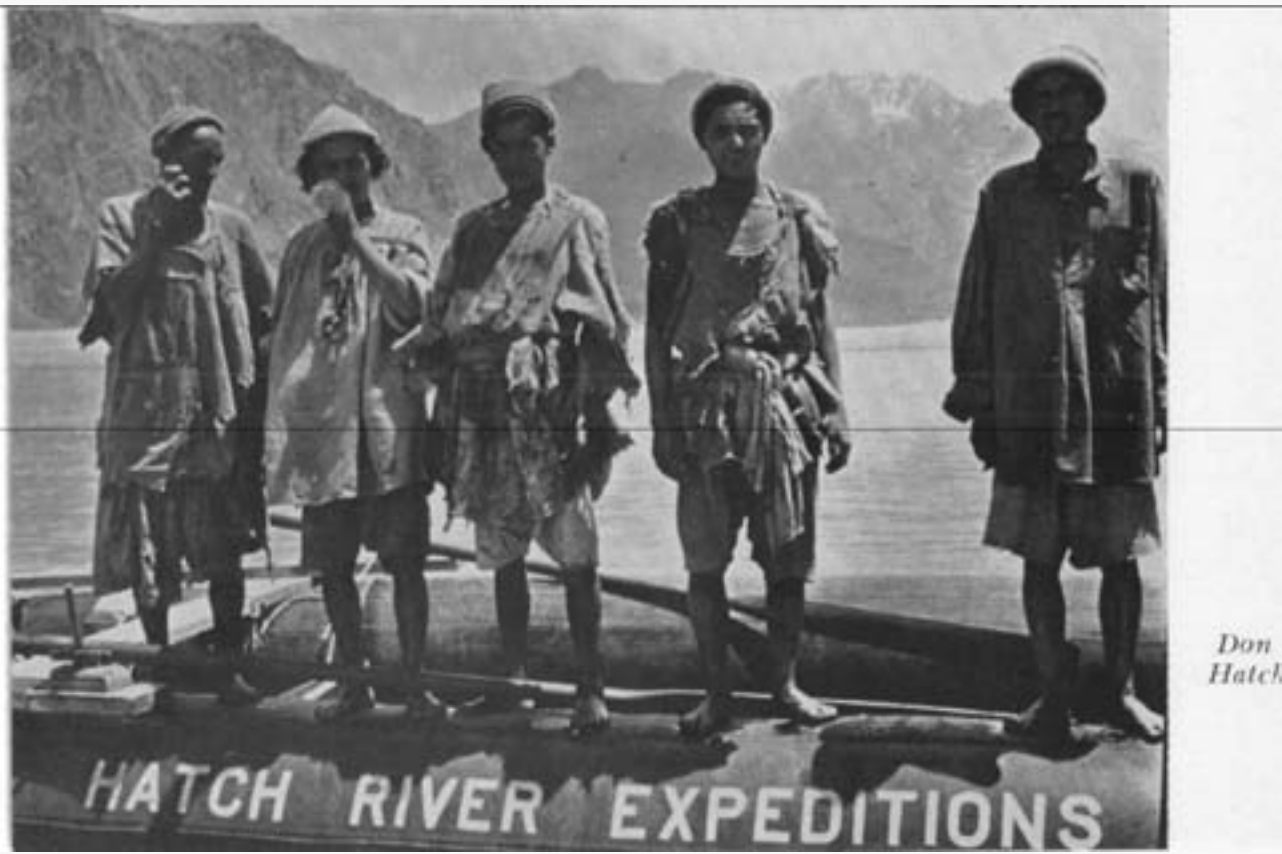
We broke into a clearing and finally landed on the right side of the river. This landing was fortunate too, for Steve had marked the map "portage:" at this point. The river was split by a huge granite boulder mid-stream. Below this it charged directly into a cliff and bounced off to the left. To the right was a massive whirlpool boiling like a giant's stew. Should a boat be so unfortunate as to get in the "stew," it couldn't get out and would probably end up rotated with the current to the bottom of the river. The river seemed to fall some 30 ft. less than fifty yards, and that's some-

thing with such a volume. Portage to us was impossible because we were on the wrong side of the river and couldn't cross the "monster" since we were too near the "tongue."

I inspected the rapid from below, dad inspected from above. We decided to run between the midstream rock and a fall some fifty feet wide extending out from the right bank. We went back to the boat and launched. We ran according to plan, but were shocked on our approach to find the waves much bigger than anticipated and far more rugged. There was nothing to do but grit our teeth in defiance—one of us did the cussing, the others prayed. Camel hair ropes were tied across the boat; we gripped them desperately for support and I "poured the coal" to the motor. To say we felt like flies on our way to the sewer would be putting it mildly.

The pontoon hit the first hole and the sides collapsed until they touched. Men were jammed between the rolls like weiners between buns at Coney Island. One "cooly" lay quivering in the bottom. Another gripped iron rings in the nose of the boat. After that first hole no one was standing. Water had flattened us all. Our director, Otto Lang, was hit by water and knocked across his lap. We both nearly went out of the boat.

Each to his river costume.



The next wave was high and we rode the crest and dropped into the second hole. It seemed to me that the water would shake the boat like the wind shakes clothes on a windy day. Passengers just wouldn't shake loose though. We continued on through the third and last hole in similar fashion. The boat was nearly full of water as it charged toward the cliff below. A huge water cushion had been built up in front of us, and had it not been for this, our boat would have clashed headlong against the cliff. As it was we slid against the cliff in a gentle fashion, hung for moment and floated off to the left. Still below us was more bad water, and we were in no condition to put up much of a fight.

We continued on downstream over a "staircase" type rapid, but actually it seemed mild when compared to the one we had just run. The crew was actually relieved and happy as we dashed through rapids similar to 24½ mile rapid in the Grand Canyon. We experienced a mutual thrill of having run a real stinker of a rapid. Nothing, absolutely nothing could stop us, and the crew felt strongly united.

At the end of this 35 mile canyon we came to a broad flood plain. The water stopped its downward plunge. Coolies took the boat out of the water. We checked our watches and we had made the run in about 31½ hours counting the inspection stop.

From Scardo we packed aboard the DC-3 plane and flew to Gilgit. This village is situated on the bank of the Gilgit river, a tributary of the Indus. After checking equipment and a simple map of the area we launched on the Gilgit. This river is so similar to the Colorado that description seems unnecessary. We ran down-stream from this point for some 50 miles. Water in the Indus continued to terrorize the crew after we passed the Gilgit-Indus junction. Again, inspection of rapids was difficult because of terrain. A camel road bordered the river some vertical 2,500 feet above, but by walking along this we could tell little of the big-

ness of the stream. At any rate, we ran on downstream running all rapids (portage was impossible). The rapids were some of the worst I've ever seen, let alone run.

At the end of two weeks Mr. Lang

figured we had taken enough pictures. One last shooting sequence was planned on the final day with us all, however. The rapid to run for this purpose was mild by comparison to others we had conquered. I was to run a seven-man (of all things!) through while the pontoon followed for pictures. Ironically, the result was that the pontoon upset and the seven-man rubber boat miraculously remained up right. We lost a man in this upset, and the crew was badly shaken by this event. The expedition concluded on a sad note, where up until that time, all had been triumphant.

And as we left the Himalayas, we looked at the peak of Nangaparbat and remembered that it had claimed the lives of 31 mountain climbers before being conquered. One more could be added to the list, for it contributed indirectly to our mishap with its snow waters and granite that formed and made the Indus.

With the purpose of the trip completed we flew through the valleys of the Himalayas to the city of Rawalpindi. I was treated for typhoid fever I had contracted while in either Scardo or Gilgit. After successful treatment in the Holy Family Hospital, dad and I flew on around the world to the United States, thus completing one of the most fantastic experiences a man could ever hope for. I have a wonderful man to thank for making all this possible for my father and me—Mr. Lowell Thomas, as fine a gentleman as can be found anywhere.



Retreat from the mighty.

Don Hatch

FACTS ABOUT WATER

by WOLF BAUER

Wolf gives us some background about the amazing medium on which we boat.

HAVING learned something of fold-
boats and equipment*, our attention
should logically be directed next to the
medium in which our conveyance antl
gear must perform. Water is a most fas-
cinating substance. To better get along
on it and in it; to master it while at the
same time to also respect it; to learn to
turn its power to our advantage; antl final-
ly to become an interested students of its
functions, actions ,and effects upon the
topography of the land, antl influence
upon all life—this section has been writ-
ten.

As in all sports and hobbies, a wider
background knowledge of the subject
fosters further interest and study, broad-
ens one's horizons and awareness, and in-
tensifies one's enjoyment thereof. Some
of us are naturally, or by training, more
technical-minded than others, and will
feel that considerably more detail should
be presented in a handbook of this type.
For them I urge a search and study of
the varied literature available on hydrau-
lics ancl geologic topics. For those who
may have always felt the subject too in-
volved, I have attempted to select only
the most basic phenomena with which the
foldboater will come in contact, and shall
try to discuss these in simplest non-tech-
nical language. I feel that a serious study
of the discussions in this section should

"Editor's note: This Section will appear
in later issues.

*In this article, American White
Water continues its presentation. of
parts from Wolf Bauer's forthcoming
book. It should be noted that the copy-
right 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.*

and all veteran and future water antl river
travelers in their effort to read the signs
correctly, antl to react with understand-
ing antl efficiency. So here we go.

STILL WATERS

Water Water Everywhere We all know water is
the universal fluid or
liquid; in chemistry we studied that its
formula H_2O indicates it to be made up
of two atoms of hydrogen antl one of
oxygen: also that there is more of this
substance on the old globe than any oth-
er, and that in fact 75% of the surface is
covered with it. So it should not be too
difficult to find a place to float our boat,
especially the kind with tang to it, in
the form of 3% table salt.

In its pure form, its weight per volume
is made the comparison standard for den-
sity and viscosity of other solids antl
liquids. With all this dampness about us,
as well as inside of us (over 90% of thee
and me is H_2O even without any par-
ticular effort on our part to get on the
water wagon), we should probably get
to know it even more intimately, that
is possible.

It's wet, it's slippery, it runs downhill.
That much just about everybody seems
to know. It really does not run, however,
but rather slithers and slips, or slides,
usually within itself antl on itself. We
know it is thin and mobile. for we can
dig a hole or trench in it that will fill
in much faster than in syrup. It is al-
ways so bent on ending up in the lowest
place, usually the ocean, that it never
gives up until it arrives there, one way
or another. If stopped somewhere along
the way between the highest starting
level and the lowest finish, it bides its
time and somehow manages to escape in
various ways eventually. A lake without
an outlet may be the apparent end-point.
If not by slow seepage thru the earth
and rocks, then at least by patient waiting

American WHITE WATER

for the sun and wind to engineer a jail break via evaporation. In the form of a gas, it will climb again to clouds, fall as rain, and then try all over again to reach the sea via the direct route of a fast moving river.

Why Things Float One of the things about water that interests us especially is its property of buoyancy. Any object immersed in it, whether it sinks or not, is pushed up toward the surface with a force equal to the difference between the weight of the object, and the weight of water that the volume of the object displaces. You may want to read this over again.

Now it so happens that water weighs about 62 lbs. (62.4 lbs, to be exact) per cubic foot, and being made a standard, its density is placed at 1. Any object a cubic foot of which weighs more than this will sink, and its density or specific gravity is then called greater than 1. Substances which weigh less than 62.4 lbs. per cubic foot will float, and have a density less than 1. This means that objects under water are lighter by the weight of the displaced water. Another way of saying the same thing is that water pushes up with a force (buoyancy) equal to this difference. This is the reason. For example, you will never be able to carry a big boulder that you were just able to lift off the bottom of the river completely to shore. It also explains in part why rivers can move such great blocks in their beds.

The weight of air is practically nil, that is above or out of water. Under water, this air would be pushed up with an almost unopposed force equal to the weight of water it displaces. A cubic foot of air weighs only a little over an ounce, so the difference between air and water is actually near maximum, providing us with the greatest buoyancy effect obtainable. Since these two substances are also the most abundant surrounding us, it should be no surprise that in the final analysis, it is usually the relative amount of air trapped or held under the water's surface by a solid object that determines the real buoyancy, whether that air is hull space below the water line inside a vessel, or sealed air space in the heavy cellulose

fibers of wood pushed below the water line.

Air then, not only determines the buoyancy of solids in water, but it may also affect this buoyancy by lowering the density of water itself in the form of entrapped large and small bubbles in frothy white water. Under such conditions, water may weigh a good deal less than 62.4 lbs., and lift up immersed objects with correspondingly less force. Water expands slightly on heating and becomes less dense. It expands somewhat on freezing to a solid, hence ice does float. If salts are dissolved in it, the density is increased, which accounts for what is common knowledge, namely that sea or salt water will buoy us up more than fresh water because our bodies displace a greater weight of salt water than fresh water. This increase in lifting force is almost 2 lbs. per cubic foot, as its weight is 64 lbs. So far so good.

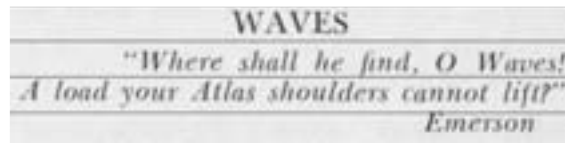
Being primarily interested in ourselves and our boat, how do we stack up in this watery medium? It is a rather strange coincidence that both the old boat and the human body have about the same specific gravity, and furthermore, that these weights per cubic foot are not very much less than that of water. In other words, the old boat, made of rubber, canvas, metal, and cellulose (all heavier than water) when immersed completely will be buoyed up solely by the tiny sealed air spaces within the wood fibers of the frame, while we ourselves, made up of heavy tissue, bone material, and water, are buoyed up by fat and mostly air spaces inside of us.

Some people weigh 62 lbs. per cubic foot, and some weigh less. Oil and fat are lighter than water, and consequently fat people, as well as women in general, because of their greater fat-to-bone ratio, will weigh often considerably less than water. One person may be so near the density of water that by contracting his chest he will sink, and by expanding it he will float, while another may not be able to submerge at all except by swimming down. Extra clothes and shoes may therefore easily outbalance a delicate equilibrium. While on this subject of floating, it is also well to remind ourselves that our head is a float or a sinker,

depending on how we use it in a physical sense, and providing, of course, we have kept it in the first place. Above water it pushes us down, immersed, this push lessens with the amount of displaced water, and it is clear that as much of it should be kept submerged as occasional breathing will allow.

A boat, or rather a hull, floating upside down has also considerably buoyancy because of entrapped air inside. Having no solid bottom in this case, this total airspace is not fully utilized as we shall see. Here again, it is not the air in the cockpit and under the decks that lifts the hull, but the air *below* the waterline or surface. There are several reasons why a tipped-over foldboat does not float as high out of water (unless it has sponsons) as in the right-side-up position. We have learned that in order for air to exert lift it must be below the waterline, and so the air under or in the hull must first be compressed by the hull bottom above it. This compression continues until the air pressure on the inside balances the water pressure on the outside (up to 5 ounces per sq. in.). Thus one will find that the surface of the water under the hull inside the cockpit is now below the outside waterline, and thus the air provides lift in the amount of this displacement. We see then, that air space is used up during compression, and the hull will sink down like a piston over the interior air, and thus float lower in the water. Furthermore, the rubber boat bottom is heavier than the canvas decking, and so the weight above water is now greater than formerly. It should be realized, therefore, that the side of an overturned kayak should not be lifted, as the compressed air will escape with great violence, allowing water to take its place, thus lowering the boat further. The value of entrapped air in duffel bags, end floats, or sponsons, air that need not and cannot be compressed by water because it is already enclosed and under considerable pressure greater than that of water, is clearly indicated. I am aware that by now we need a little breather from all this buoyancy discussion, vital as an understanding of it becomes in the many field problems of the foldboater, and a change in subject may

be welcome. In any event, may I remind the reader that the subject matter will continue to be anything but dry.



The foldboater seldom paddles across a completely smooth, glassy, and calm surface of the water, at least not for any extended period. This water surface, no matter whether it is that of river, lake, or sea, presents an ever-changing kaleidoscope of colorations and hues, of lines and designs, of wave and current movements. It seems always alive, whether boisterous or peaceful, forbidding or inviting, and it continuously delights and surprises us during our sojourns upon its reaches. Of all its characteristics, the phenomena of waves of all types is one of the most intriguing. Because we cannot always remain aloof and detached, we must meet and cope with, battle against or play with them at times, their peculiarities are of real interest to us.

Waves can be classified for our purpose into several basic types, depending on their origin as well as on their physical characteristics. The foldboater will come in contact with the following:

1. Wind waves moving across still water.
2. Swells.
3. Surf moving over shoals and against beaches.
4. Tidal chop when tide currents and wind clash.
5. Wakes and following displacement waves from passing vessels.
6. Standing waves or "haystacks" in rivers.
7. Hydraulic jumps in the form of "rollers."
8. Vertical eddy waves in the form of "fences" and "mushrooms" in streams.

The last three types of waves will be treated separately under river hydraulics, as they are direct manifestations of moving water alone.

Of general interest and background is

American WHITE WATER



SURFING BEFORE THE STORM.

With increasing wind, breaking waves are steep and should not be taken sideways.

Wolf Bauer

the fact that surface waves ~~may~~ range in size ~~from~~ the smallest vibrating ripples set up by a hapless fly struggling in the coffee cup, to the greatest storm and so-called tidal ~~waves~~ that have reached over 50 feet in height. Aside from the usual wind-generated types, there are also those caused by earth or sea quakes, by sharp barometric variations, and by, as yet, little understood disturbances in oceanic depths relating to the continental currents. So-called seismic waves originating from a sinking spot in the ~~ocean~~ bottom, or a rise or uplift due to volcanic action may travel more than half-way around the globe at unbelievable speeds up to over 450 miles an hour. These are of tremendous length and low height while in deep water, but due to the great mass energy involved, this energy is expended

in the form of a high wave front on reaching shallow waters, and thus often causes great damages along a coast line. Its impact on the shoreline is frequently preceded by an ominous withdrawal of water before the engulfing crest sweeps in.

WIND WAVES

Without going too far into technical details, it is probably sufficient to state that the water making up an ordinary non-breaking wave does not move forward with it across the surface; each water particle describes a more or less circular path in a vertical plane with the passage of the wave form, but returns each time to its original position. Thus ~~the~~ water on the crest of a wave actually moves forward a short distance in the direction of the wave

travel, and then recedes an equal distance in the trough section. This motion is, of course, maximum on the surface and diminishes rapidly downward, as the effect of a surface wave does not carry far below the wave trough. This phenomenon of the rotary oscillating forward and backward motion has no doubt been seen and experienced by the observant reader watching a bobbing piece of drift from a dock, or floating and swimming himself past a stationary object when high waves or swells were running. In considering this wave action under actual high wind conditions, however, wind friction upon the thin surface layers of the water plays a part, and develops an actual shallow top current in the direction of wave travel, the greatest current velocity being, no doubt, at the crest top surface where the wind gets its best purchase.

Some basic relationships of waves should be mentioned here. A wave is composed of trough and crest. The trough or valley is not quite as far below the normal water level as the crest is above it. Also the concave surface of the trough is not as abrupt a curve as the convex crest. Furthermore, the front of the wave ahead of the crest is generally steeper than the back behind the crest and they vary depending on wind pressure. The steepness of either is not predictable, and appears to be a function of many variables. The height of a wave is measured vertically from the bottom of trough to top of crest, while the length is taken from crest to adjacent crest.

A number of mathematical relationships have been worked out for estimating the length, height, and speed of wind-caused waves. None of these apply accurately over the full range of conditions because of influencing variables which cannot be measured. With this caution in mind, the following very approximate equations are given which might be usable to the touring paddler in still waters.

- A. Wave height as a function of fetch (windward distance of open water)
 $H = 1.5\sqrt{F}$, where H =height in feet, F =fetch in miles. (for distances below 40 miles, the maximum heights are actually greater.)

- B. Maximum wave height as a function of steady wind strength $H = \frac{1}{2}V$, where H =height in feet, and V =wind velocity in M.P.H.

- C. Wave velocity in terms of wave length (wind waves) $V = 2.25\sqrt{L}$, where V =wave velocity in feet per second, and L =length of wave. (some formulae show a constant of 3 instead 2.25) To use the formula in terms of M.P.H. $V = 1.5\sqrt{L}$

It is interesting to note that waves may lose their height and steepness as they move out of the wind area, but they retain their length and speed. They also will cross other waves of large or small size without loss in their own characteristics upon emergence from such a meeting. This is readily observed on board boat when passing another vessel.

Wind swept waves are usually very uneven in size and shape because wind is generally uneven in direction and strength. This may result in interferences which reduce, or reinforce, causing the size of waves to be smaller or larger. Their shape depends on whether the wind pressure is steady or not, whether it is increasing or decreasing, whether it is increasing slowly or rapidly, as well as the depth of water, topography of shoreline, and presence of currents. Sudden winds generally cause a breaking of crests (white caps) in even small waves. This crest breaking and cascading is not only due to a combination of steepening frontal crests and a higher velocity forward surface current layer on top, but is also due to a wind top-flattening which aids the start of the overturning and break-up of the peak. This is a different process from that of the surf breaker waves.

Waves formed in mountain-locked lakes, especially long lakes, can become critical to the foldboater because of their steepness and not from excessive height. This can be traced directly to the suddenness and rate of wind increase in mountainous regions.

The touring paddler will find a keen fascination in meeting these various wind waves in his water travels. They add zest and pure enjoyment to his paddle sport. Waves give life and change and

pulsation to the travel course. With increasing wind they bare their teeth only to be cleanly split by the efficient prow of his streamlined hull, and so pass harm-lessly underneath in the head-on battle of strength and endurance. On the other hand, these same waves can be made to impart some of their dynamic energy toward the progress of the traveler's kayak, and many a foldboater has found the thrill of planing on the frontal crest of a big following wave, as he paddles frantically to keep the boat aligned and at the correct speed. From a quick computation it can be seen that a 23 foot long wave advances at just about the maximum down-wind speed of a paddler, i.e. $V=1.5\sqrt{L}$ or $V=7.5$ miles per hour. With a good following wind plus any slight crest current, plus the forward com-

ponent of the force of gravity of the forward-inclining boat, this planing action can be prolonged, and with some practice applied to even longer waves at higher speeds.

Swells Wind waves will continue at full size, of course, only as long as wind pressure provides the energy for their formation and movement. Due to the low viscosity of water and the low internal friction of the elemental water particles upon each other, waves will continue to roll and travel great distances after the wind has ceased, or after the wave has left the area of air movement. These distances will depend on the size or mass and speed, hence kinetic energy, and friction reduces the height but not the speed of the wave. These more or



PULSE OF THE STRAITS

'With decreasing wind, swells may be taken sideways. Note the bobbing-without-rolling action of the narrow kayaks with swells off the beam.'

Wolf Bauer

less gently-contoured waves are called swells, and may be the result or aftermath of a dying wind, outrunners of a distant storm area, or wakes from a moving ship reduced by time and length of travel.

Paddling against, with, or parallel to high and long swells during times of little or no wind is truly a soul-satisfying experience, as in no other craft can one climb the mountains and coast down their sides into the valleys of the sea with such realism and sport. It will take, nevertheless, the smart observant timing of the opportunist foldboater to cash in on these infrequent chances along the lake or sea coast when conditions for such sport are favorable. In any event it demands a diligent wait and study of weather reports and barometer before one may find the opportunity to experience this surging lift and fall in the tiny seaworthy touring kayak, be it single or double. The important thing to remember and watch out for, of course, is an early recognition of a freshening or gusty wind which can quickly superimpose small wind waves upon the giant swells, and thus confront the paddler with unfavorable wind pressure conditions on the exposed and crest-breaking hull.

Surf and Shore Waves As wind waves and swells approach the coast, they undergo a distinct change in process of passing over the shallow shelf of the beach or shoals beyond it. The breaking and rolling surf wave is familiar to us all. Why does the sea or lake often look so relatively calm and composed in contrast to the roaring commotion of the beach combers cascading tons of water upon themselves and the strand? This is explained by the fact that as the depth of water approaches that of the wave height, the bottom oscillating forward motion of the wave is hindered and held back by friction. This allows the upper water layers of the crest position to be carried ahead of the slower supporting column until the top finally caves forward. This slowing down effect in shallow water will obviously cause following waves to catch up and compress the waves into shorter and higher ones.

The available energy is now expended in this heightening effect, hence the transformation into the more slender and high unstable crests of the breaking surf wave. The spectacle we witness is the final curtain call to one of the many chains of energy transformations in nature which has its origin in the sun's radiation. In this case the uneven heating will start air masses to move in the form of wind, which in turn pass on their energy to water waves, the latter finally dissipating their acquired energy in the work of raising the water of the last beach wave and smashing it against the coast, the final dissipations being in the form of white-water eddies, heat, and undertow, all moving sand and rocks as well. The battered surf swimmer and surf-board rider is convinced of the reality of this energy. That wave energy is more than a theory is attested by the fact that a shore wave has been known to lift and move an anchored concrete pier block weighing two thousand tons or four million pounds.

To complete the discussion of wave action along the shore, it is of some interest to realize that two currents may be set up in the water along a beach entirely due to wave action, the so-called undertow and the shore current. The undertow is the only one when the waves come in perpendicular to the shore line. This current is of varying strength and runs straight down and out under the waves. If the wave troughs are very close to the shoal bottom, it is obvious that it can affect a swimmer projecting down into it, and also aid a boat leaving shore.

When surf hits the beach at an oblique angle, the successive wave impulses actuate a current which runs along the shore, and is often responsible for building up sand spits, bars and banks, and beaches. Its effect is minor to that of strong tidal currents where these exist. All the described characteristics of shore waves are modified by the length and incline of the shore or coastal shelf or sea or lake. When the shore of the sea, sea inlet, or lake is made up of steeply inclined banks or cliffs extending down into deep water, then the incoming waves will not show the above characteristics nor power

dissipation of surf, **but** they will **be** reflected back upon the water whence they came.

The paddler will put to practical use his knowledge of the changing conditions of waves on approaching a shallow beach or an abruptly rising shore. Paddling along the shore he will stay clear of shoals such as reefs, and sand bars, and ride the waves before they become short and steep. He will also recognize the tumultuous conflict of reflected waves along the cliff-like shore of mountain lakes and rocky coast line at high tide, **as** the confused pattern and erratic motion of the reflected intermingling waves will place him at a great disadvantage.

Tidal Chop Waves of somewhat peculiar character are sometimes met in the tidal currents of a meandering coast line or island-studded straights and sounds. These choppy waves are generally short and low, **but** always extremely steep and irregular both in shape and action. Under moderate winds blowing against a strong tidal current, these waves may appear as so-called "standing" waves from the shoreline, similar to those in rivers caused from obstructions. Frequently one will find that the tide currents run in several or shifting directions, and the battle between wind and tide produces conditions that can give power cruisers and ships a bad time. There are many notorious spots of this type in the world where ships have foundered. Conditions of this sort can be produced in all degrees and scales, and the foldboater paddle-touring in tide currents of coastal waters must learn to recognize such an area or meeting place, small and harmless as it usually may look to the uninitiated. Because one is usually much further removed from shore here than on a river, the feeling of paddling in such current-opposed waves is one of confusion and perplexity as to one's actual progress. **<**hanging current direction will cause such waves to be discontinuous, oddly peaked, and irregular. If travel is with or sideways to the current, one will be surprised at the speed of impact and approach with such waves, small as they might be.

Boat Wakes Every moving craft leaves a wake of waves behind it. The greater the ratio of length to beam, and length to speed, and the sharper drawn the underwater bow and stern lines,—the lesser is the wake in proportion to the vessel. Two wave motions are observable, the side wake leaving the bow in a spreading V-shaped furrow, and the following stern displacement wave or swell. The first is a narrow band of more or less steeply pitched waves of short length moving diagonally forward from the bow and to each side, and at the angular component of the ship's speed. Fast-moving blunt-nosed boats such as fast fisherman and free tugs will throw very sharp and breaking curlers which can be recognized by the whitecap line near the boat. They soon become more rounded, however, and turn into gentle swells. Large steamers and freighters under full steam and load throw fairly large wakes, more in the nature of swells, but of shorter length. Taking such swells from a passing vessel is always fun when the water is relatively quiet otherwise. In a running sea, on the other hand, the mixing of wake waves with wind waves at various angle can produce some unpredictable **green** towers of water upon which the paddler may find himself precariously perched for an instant. It is always good practice to point one's bow directly into the expected direction of the approaching wave front, keeping an early visual check on the character of the wave, as well as its effect on the existing waves it is crossing. Due to the fact that only a few waves are involved each time, any difficult conditions are only maintained for a matter of seconds. Stern displacement swells are noticeable when crossing immediately behind a passing ship. This wave or swell is rounded and smooth with most craft, although it will pyramid in a sharp crest close to the stern of boats that are planing. The stern swell moves in the same direction and with nearly the same speed as the boat, but soon loses its height because its width is initially only that of the beam of the boat.

On calm days, the wake swells of passing ships become items of delight and sport to the touring paddlers. Some people go so far as to consider all ship cap-

tains morally bound to produce their highest speed when passing a foldboat in a dead calm. As for myself, I am blessed with a kayak wife who simply goes berserk in her single the instant she has spied a moving object that might throw a wake. Without goodbye or so much as a glance, she will proceed to paddle at an intercepting angle as if drawn by a magnet, to be closest while they're biggest, to maneuver into planing position, and then speed upon their crests into the wide blue yonder. The trip, the goal, the companionship of fellow paddlers—all seem to be forgotten as her outline fades into a mere speck on the horizon. I can only hope that one of these days as her timing improves, to the increasing horror of interception—challenged skippers, that she will tire of the more frequent number of embarrassed returns when cautious helmsmen have evidently swung wide of her determined path or slowed down courteously at the last minute to a near-stop, to prevent this strange apparition, eskimo or not, from committing self-destruction in the rollers of their wake.

In the following issue we will discuss running water.

■ * *

ESKIMO ROLL TRAINER

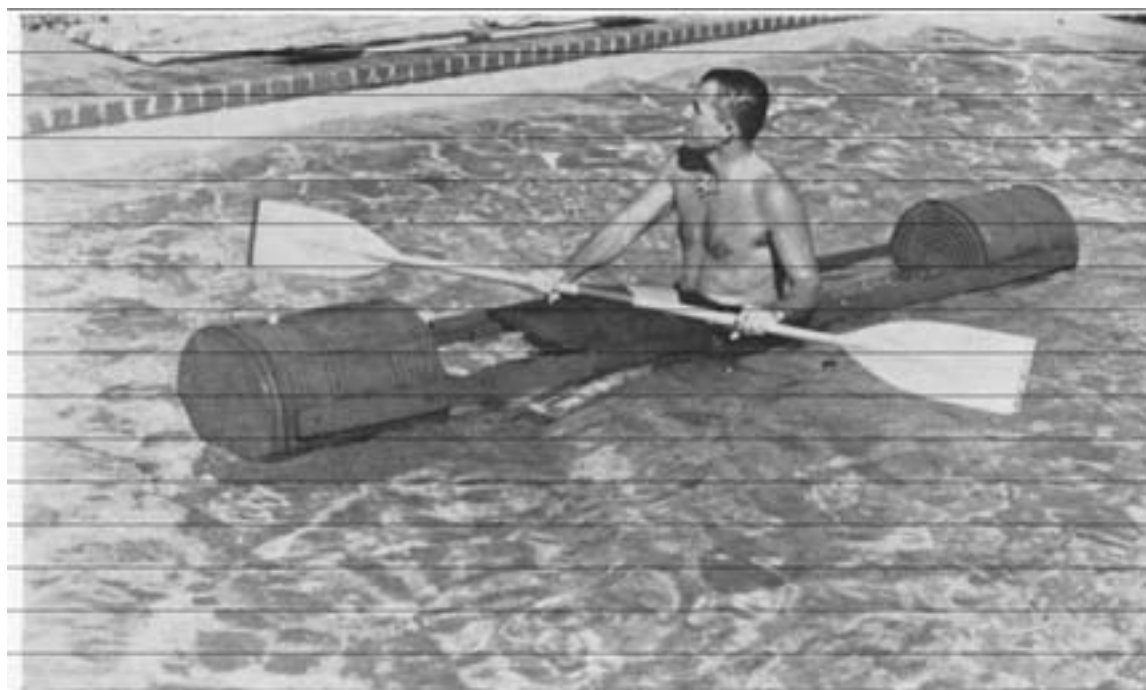
By Carlos Yerby

The Eskimo Roll Trainer, here illustrated, is inexpensive to build and will save much wear and tear on boats if you are planning an Eskimo Koll class this winter or spring. Because it is cylindrical it is easier to roll than any boat we have seen and so provides encouragement for the novice. Since there is no cockpit to fill with water there is no lost time for dumping water following an incomplete roll.

Following mastery of each rolling method in the Trainer the paddler should then try it in his own boat. Experience has shown that the learning process is shortened considerably through the use of this device.

The learning sequence should commence with simple paddle bracing, continue with long method (extended paddle) half rolls, proceed to the pawlata or sculling method, and finally achieve the short or screw method. This last, once learned, is by far the most important addition you can make to your repertoire of paddle maneuvers and will be forever useful.

For further information on rolling see AWW for August, 1955.



Carlos Yerby

CRUISING IN THE 1880's

Contributed by JEANNE LEE

The following account, excerpted from a book published in London in 1876 ("The Great Divide" by the Earl of Dunraven), reflects an approach to river cruising which differs from that of present-day devotees. Yet certain sentiments of this nineteenth-century British nobleman are ageless and universal among wayfaring canoeists. The author was addressing his fellow-countrymen on the subject of adventure in our own woolly West, specifically the north Yellowstone area. No particular stream has been mentioned in this passage; the experience related is evidently a synthesis.

"Among all the modes of progression hitherto invented by restless man, there is not one that can compare in respect of comfort and luxury with travelling in a birch-bark canoe. It is the poetry of progression. Along the bottom of the boat are laid blankets and bedding; a sort of wicker-work screen is sloped against the middle thwart, affording a delicious support to the back; and indolently . . . you sit or lie on this most luxurious of couches and are propelled at a rapid rate over the smooth surface of a lake or down the swift current of some stream. If you want exercise, you can take a paddle yourself. If you prefer to be inactive, you can lie still and placidly survey the scenery, rising occasionally to have a shot at a wild duck; at intervals reading, smoking and sleeping. Sleep indeed you will enjoy most luxuriously, for the rapid bounding motion of the canoe as she leaps forward at every impulse of the crew, the sharp quick heat of the paddles on the water, and the roll of their shafts against the gunwale, with the continuous hiss and ripple of the stream cleft by the curving prow, combine to make a more soothing soporific than all the fabrications of poppy and mandragora that can be found in the pharmacopoeia of civilization."

"Dreamily you lie . . . lazily gazing at the pine-covered shores and wooded islands of some unknown lake . . . and you wander into dreamland, to awake presently and find yourself sweeping round the curve of some majestic river, whose shores are blazing with the rich crimson, brown, and gold of the maple and other hardwood trees in their autumn dress.

"Presently the current quickens. The best man shifts his place from the stern to the bow, and stands ready with his long-handled paddle to twist the frail boat out of reach of hidden rocks. The men's faces glow with excitement. Quicker and quicker flows the stream, breaking into little rapids, foaming round rocks, and rising in tumbling waves over the shallows. At a word from the bowman the crew redouble their efforts, the paddle shafts crash against the gunwale, the spray flies beneath the bending blades. The canoe shakes and quivers through all its fibres, leaping bodily at every stroke.

"Before you is a seething mass of foam, its whiteness broken by horrid black rocks, one touch against whose jagged sides would rip the canoe into tatters and hurl you into eternity. Your ears are full of the roar of waters: waves leap up in all directions, as the river, maddened at obstruction, hurls itself through some narrow gorge. The bowman stands erect to take one look in silence, noting in that critical instant the line of deepest water; then bending to his work, with sharp short words of command to the steersman, he directs the boat. The canoe seems to pitch headlong into space. Whack! comes a great wave over the bow; crash! comes another over the side. The bowman, his figure stooped, and his knees planted firmly against the side, stands, with paddle poised in both hands, screaming to the crew to paddle hard; and the crew cheer and shout with excitement in return. You, too, get wild,

and feel inclined to yell defiance to the roaring hissing flood that madly dashes you from side to side. After the first plunge you are in a bewildering whirl of waters. The shore seems to fly past you. Crash! You are right on that rock, and (I don't care who you are) you will feel your heart jump into your mouth, and you will catch the side with a grip that leaves a mark on your fingers afterwards. No! With a shriek of command to the steersman and a plunge of

his paddle, the bowman wrenches the canoe out of its course. Another stroke or two, another plunge forward. and with a loud exulting yell from the bowman, who flourishes his paddle round his head, you pitch headlong down the final leap, and with a grunt of relief from the straining- crew glide rapidly into still water. Through the calm gloaming, through the lovely hours of moonlit night you glide . . ."

* * *

Reproduced from Dunraven's book by Lee Studios.



Slalom and Wild Water Races On the Arkansas

This year the Fibark Club is sponsoring its ninth annual race week on the Arkansas. The International Slalom Race is scheduled for June 6th and 7th, and the American National Slalom Championship will be held on June 7th and 8th. On Sunday, June 9th the clown-river race will be held.

Contestants are expected from France, Germany, Switzerland, Austria, Luxem-

bourg, Canada and Italy—as well as from the United States. As usual, an appreciable fraction of the American contestants will be from the staff of American White Water. An interesting battle is expected between Elsa Bailey (our Western Advertising Manager) and Joan Stacey (your Editor's wife). Last year each of them carried off two medals in the Slalom competitions.

American White Water will carry a complete story on the National Championships, and results of the other races.

The American Canoe Association

by TYILLIAM RHODES, Commodore (1956)

EDITOR Dave Stacey has complimented the writer by putting the question to him with a request for a story about "what the A.C.A. is, and does." It is hoped the result will not prove too tedious and will be, to some extent, enlightening.

First, the A.C.A. is an organization of individuals. The individuals are from all walks of life and have in common a healthy interest in the out-of-doors and especially—canoeing. It is a society of canoeists. Canoeing, a typical American sport and our chief heritage from the Indian, has been popular amongst our outdoors people since the discovery of America.

The value of unity and order has been recognized by mankind since far back in the beginnings of history—so it is not strange that even such independent entities as canoeists should recognize the benefits of organization.

The A.C.A. came into being to fulfill this need for an organization. An association to foster friendship, protect our heritage, and first and always to promote canoeing. The beginning was on the banks of Lake George, in New York, during August of the year 1880. There were fifteen charter members from the United States and Canada who were dedicated to the advancement of canoeing as a sport.

Perhaps the most famous of the early canoeists was the first Secretary of the A.C.A., Mr. Nathaniel Bishop, who made a memorable voyage in his paper canoe, "Maria Theresa," from Quebec up the St. Lawrence and Lake Champlain, down the Hudson and Atlantic Coast to Key West and Tampa for a total distance of 2,500 miles.

It is the purpose of the individuals who now make up the American Canoe Association to live up to the ideals of the founders. It is their basic and continuous desire to promote the sport of canoeing. So it might be said that the A.C.A. is an organization founded for the purpose

of promoting canoeing and, also, that this is what it does—in all of its branches, on an amateur basis.

The A.C.A. is composed of nine Divisions; eight Divisions are located in the United States and one, the Northern Division, is the whole of Canada. Executive head of the Association is the Commodore who is assisted by such National Officers as the Secretary, the Treasurer. President of the Board of Governors, Chairmen of National Committees (all elective offices), and such other committees as the Commodore may appoint. The highest appointive office is Editor of the American Canoeist magazine. Each Division has a Vice Commodore at its head, a Purser (who is Secretary-Treasurer), and the various Committee members necessary for the promotion of canoeing within the Division.

The governing power in the A.C.A. belongs to the Executive Committee which is made up of representatives from all Divisions and which meets once annually unless called together by the Commodore for extraordinary reasons. All constitutional and by-laws changes must be ordered by the Executive Committee.

The physical assets of the A.C.A. are the responsibility of the Board of Governors. Chief among these assets is Sugar Island which is located among the 1,000 Islands near Gananoque on the Canadian side of the St. Lawrence River. One member from each Division is elected to serve on the Board of Governors. These members are held in considerable respect because they are elected on a basis of past performance, continued loyalty and service to the Association—the Board is made up largely of past-Commodores.

The five official activities of the A.C.A. are: Cruising, Conservation, Sailing, Racing, and Slalom. Each of these activities is headed by a Chairman and a Secretary. Each Committee is responsible to the organization for the conduct of its particular activity and each Committee controls its own activity.

At the present time it appears to many that canoe racing is the predominant interest of the Association. This is probably due to the publicity attending Olympic participation and the numerous regattas which are covered by newspaper articles and pictures, and due also to the active political participation of racing canoeists in the government of the Association. Even so, the racing canoeists are not satisfied with their progress and would be happy to have more competitors from all over the United States to augment their ranks. At the present time Olympic-type canoe racing is centered in a few Eastern States.

However, it is not and never was the intent of the A.C.A. to encourage one activity in preference to others. Each activity has an equal opportunity to promote its own interests. If one activity seems to be more popular than others, it is because of the activity of the individuals who participate in it.

For many years cruising was the most active phase of the A.C.A. and it is quite possible that cruising will again take its place in the forefront. It is possible that there are many more cruisers than racing enthusiasts within the Association and they need only take a more active part in the government of their Association to achieve greater recognition.

Canoe sailing is a vigorous sport which represents only a small part of the A.C.A. numerically but is of international importance. Since sailing champion Lou Whitman visited England several years ago and returned with the International Challenge Trophy won from England the American team has successfully defended it on our own shores.

Canoe Slalom shows great promise and is valuable as it attracts the cruising and white-water canoeist. Competitions have been held in four Divisions of the A.C.A. so far and it is quite possible that slalom will someday be the outstanding attraction for American canoeists.

Conservation is the most recent activity added to the A.C.A. official family of interests. Of course, A.C.A. canoeists have been interested in conservation right along but it was felt by several, and especially the present Chairman, Daniel K.

Bradley, that more could be accomplished in the preservation of our natural waterways through the concerted action aroused by an efficient national committee.

Camping is universally enjoyed by A.C.A. members and there has never seemed any necessity for a formal committee to organize campers. At the Annual Meet which is held at Sugar Island every year, during the month of August, the members gather for a glorious two weeks together. Here, on this gem of an island at the big A.C.A. re-union, the members are in their glory and they come from near and far with their families.

So, in the foregoing inadequate words, I have tried to tell what the A.C.A. is, and what it does. It is my hope that this article will promote a greater understanding among non-A.C.A. members regarding our purposes and ideals and, in general, promote the growth of the canoeing sport in the United States and Canada. Certainly we are working shoulder-to-shoulder with the AWWA and all other groups, associations, and clubs which exist for the wonderful purpose of creating and maintaining interest in our waterways, promulgating the canoeing story, and, in short, promoting canoeing.

DO IT YOURSELF DRIP RINGS

From a piece of inner tube cut two discs about $2\frac{1}{4}$ inches in diameter. In the center of each cut a circular hole slightly smaller than the diameter of your paddle shaft. Slip one of these washers over each shaft and slide it down the shaft toward the blade. You will find these quite as effective as the moulded commercial variety.

From the "Canoe-Camper"

DEPARTMENT OF INSANITY

Certain anonymous persons have suggested a new sport called "Avalacking." You put a kayak at the head of a gulley filled with loose snow, start an avalanche, hop in your kayak and paddle like the very devil. This sport is not recommended for beginners.

QUEEN MARY ON THE COLORADO

Editor's note: This account is from a letter written by Georgie White who is one of the best known and most colorful of the Colorado River guides. The novel procedure described here is testimony to the ingenuity of this woman.

If you had been with me in 1954 and helped carry our rafts and all that luggage around those rapids we could not run, you would know why I scratched my head as I rubbed my aching back. Remember this was the year of extremely low water and there seemed to be more rocks than water. Each portage increased my determination to find a way to run these rapids safely.

In the face of much scoffing we lashed the three "ten-man" eighteen foot navy neoprene landing craft together side by side using nylon rope. I had reached this decision by reasoning that if one boat tended to get in trouble, the other two would serve to pull it out—the old principle that there is strength or safety in numbers.

In the largest rapids we ran broadside, as an eighteen foot diameter hole could upset the works if going straight forward. We were using oars for control; and by the end of our canyon trip all hands

were enthusiastic for this "no portage" system.

With this experience as background I went ahead with plans for 1955. In the belief that we would not have to portage I went to still larger rafts. This time we used three twenty-seven foot neoprene rafts and again lashed them together with nylon rope. Because this rig was too large to handle with oars we mounted a 10 horsepower Johnson motor on the center boat. With the motor throttled very low and driving forward we found this large affair the most secure ever.

We still rowed the three ten-man set up for a hilarious ride and also had a single boat for thrills. For running the biggest rapids, which are sometimes called falls, we lashed the single ten-man boat on top of the three twenty-seven foot craft, making a sort of a poop deck. This rig was promptly dubbed the "Queen Mary."

During the 1956 season the "Queen" sailed again with great success carrying the largest party (35 people) in the history of Grand Canyon navigation. The picture below shows our party and its fleet.

* * *



William
Belknap
Jr.



DONN CHAKNLEY, Chairman

The Safety Committee respectfully submits the following Safety Code for comments and additions. The strength of any organization is based on the active participation of its members in forming and supporting its policies. Therefore, it is vital that any individual who has any comments, etc., to make on this Code, do so—and soon! Use a 2c postcard, (they're the easiest), an airmail letter, a telegram, or any other means of communication that pleases you. **HUT USE SOMETHING!!** Please address your remarks to the Safety Committee Chairman, Donn Charnley, 1420 East 56th, Seattle 5, Wash.

The Code has been written specifically, with the one basic precept—that it be adaptable to any kind of man-propelled craft travelling on white or wilderness waterways. Human nature necessitates the rigidity of the Code. Any generalized code will not be specific enough for those who are already safety-minded boaters, or who are safety minded new-comers. For those who do not stop to consider what safe boating procedures are, a generalized code will be meaningless. Thus, the Code must be as specific as possible and still be flexible enough for all boaters.

1. Never go with only one boat. A safe minimum is three.
2. If you are a non or weak swimmer, wear a workable inflated life jacket at all times. Obviously: Swimming ability is preferable. (See Section 7e).
3. Accurate knowledge of your ability is absolutely essential. The code's following sections are based upon the assumption that a river-classification system based on an expert's ability necessary to pass through a particular section without mishap is universally understood.
4. Always wear your life jacket when attempting a stretch of water which is near or at your ability level. (Alternative: Wear a jacket when you can't wade in emergencies).
5. Always be dressed for any extreme of air and water temperatures you may possibly encounter. Be prepared for a dunking in icy waters with wool clothing. Don't let a prolonged exposure to a merciless sun make you miserable for weeks to come.
6. Always carry the following essentials, in waterproof bags: (This means each person to have all).
 - a. Extra clothing.
 - b. Extra food.
 - c. Sunglasses and skin protection.
 - d. Waterproof matches, and a candle or other type of fire starter.
 - e. Knife.
 - f. Flashlight (with working batteries).
 - g. First Aid kit. Snake bite kit where necessary.
 - h. Map and compass.
 - i. Mirror signaling device.
7. Each boat is to be equipped with:
 - a. A spare paddle or oar per person, lashed conveniently for immediate use.
 - b. Flotation devices adequate to insure continuing buoyancy of completely swamped, fully loaded craft. (These can be air tanks, inner tubes, beach balls, etc., which are securely fastened).

- 1/2 inch bow and stern safety lines, 20 feet minimum, each securely tied to the boat, and terminating in a bright colored float. Each of these must ~~be~~ carried in such a manner ~~that~~ they will float free from the boat in case ~~of~~ capsizing, either directly, or ~~at~~ most with a gentle tug. Never tie these lines down or carry them in the cockpit.
- d. Lead and river boats, at least, must carry a 50-100 foot, 3/8 to 5/16 inch throwing line with a float at one end.
- e. A life jacket per occupant. Be sure it is a type which will support ~~you~~ face-up if you are unconscious.
- f. ~~An~~ adequate repair kit to handle anything ~~but~~ major damage to the boat.
- g. Hailing sponge and ~~bailing~~ container.
- 1. A spray deck is desirable if craft can so ~~be~~ fitted.
- i. In Class IV and V rivers—(Extremely rough), a pith-type crash helmet should ~~be~~ considered.
- 8. River (moving water) organization.
 - a. The leader's word is final. His decisions can ~~be~~ overridden only by a majority vote on the side of safety.
 - b. ~~The~~ leader must have as complete knowledge as possible of the waters to be travelled. ~~il~~ preview run by him and his supporting leaders not over two weeks earlier is preferable.
 - c. The leader must decide or know the classification of the waters. Each person desiring to participate must furnish evidence of his ability classification.
 - d. No one should be allowed to participate beyond his ability classification, ~~EXCEPT~~ IF: Those stretches known to be beyond his ability can ~~be~~ portaged.
 - e. Everyone must know and understand the sound and hand signals to be used.
 - f. Group Organization:
 - 1. ~~Lead~~ boat: Experienced, strong boatsman, has ~~best~~ knowledge of water, knows rescue tech-

- niques. NO ONE passes this boat.
- 2. Rear-guard boat: Experienced, strong ~~boatsman~~ knows rescue techniques. NO ONE behind this boat.
- 3. Each boat: has a regular ~~posi-~~tion and maintains it, is responsible for boat ~~behind~~ it. The flexibility of this rule depends upon the waters. (Bunching in quiet stretches can make a trip more enjoyable).
- 4. If number of boats is unmanageable for waters, divide party into subgroups with ~~each sub-~~group having its own internal organization as ~~above~~. Allow adequate time between groups to prevent bunching, yet to keep in periodic touch with each other.
- g. Know the weather forecast and possibilities. Plan accordingly.
- h. NOTIFY others of trip plans. Officials where required, but notify someone!
- i. KNOW KESCUE PROCEDURES. Get the victim first,—~~alone~~. He is worth a million boats.
- 9. "Still," (lake, salt) water organization:
 - a. Never travel beyond a returnable distance to shore. (Local weather and water conditions will dictate this distance).
 - b. Group organization same as on rivers. Large group can stay closer together, however. Side guards are recommencecl for a large group.
 - c. Knowledge of weather is essential. Mountain lakes can change from "mill-pond" surface to a ~~deadly~~ surface of high, bucking waves in less than ten minutes!
 - d. If on salt water—have complete information of tides and currents.
 - e. Add to essentials: sea anchor, tide tables.

In the ~~following issue~~ we ~~will present~~ comments on ~~the~~ proposed Safety Rules, ~~the~~ National Park Rules for the ~~Grand Canyon run~~, and an accident report for 1956. Don't forget to send in your comments.

Triangle of Velocities

by GEORGE G. SIPOSS

Here are some ideas about ferrying.

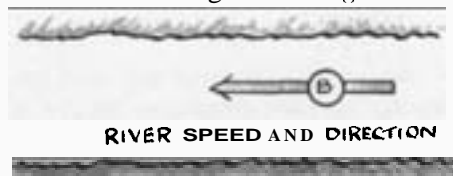
Some of the readers of this magazine may be interested in the theoretical aspects of propelling a canoe. It has been shown time and time again that using one's head in a difficult situation may prove more useful than mere strength. This article will help you to make use of the Science of Mechanics in negotiating difficult rapids or currents. A river current, and the motion of a kayak can be considered as velocities.

Representing a velocity by an arrow, the following have to be kept in mind:

- The Magnitude of the Velocity.
- The Direction of the Velocity.

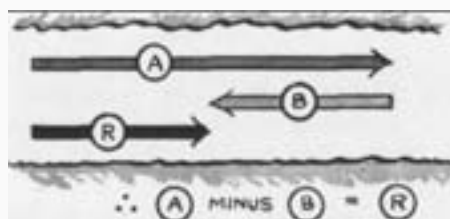
If an arrow is drawn corresponding to the above conditions it is called a **VECTOR**. Two or more velocities acting on a body can be substituted by a single one, called the **RESULTANT**. Replacing two vectors by a resultant is called adding vectors. When adding vectors we place the beginning of one vector (A) to the end of the other (H). The **RESULTANT** of (A) and (H) will be a vector connecting the beginning of vector (H) with the end of (A). The magnitude and direction of the resultant can be seen by constructing a diagram.

E.G.: Let us represent the current of a river by an arrow (vector). Let 1 m.p.h. be represented by $\frac{1}{4}$ inch of the arrow. A current of 4 m.p.h. is then represented by an arrow 1 inch long. The top speed of a kayak is say 8 m.p.h. in calm waters (2 inches). If the canoeist decides to paddle upstream his (resultant) speed will be 4 miles per hour with respect to the shore. Drawing the diagram:

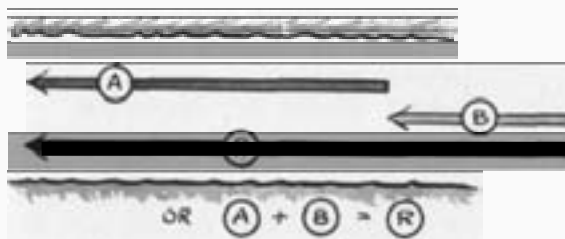


The speed of the kayak is represented by vector (A).

Connecting ends of vector A and B ("superimposing") we get:

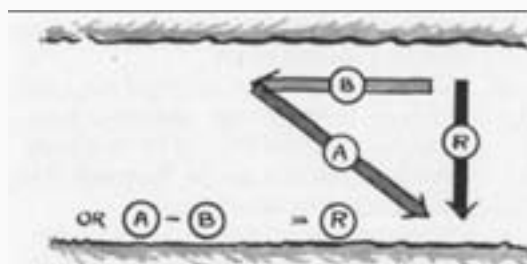


If the canoeist paddled downstream, his resultant speed would be 12 m.p.h. or "A" kayak speed, plus "K" river speed = "R":



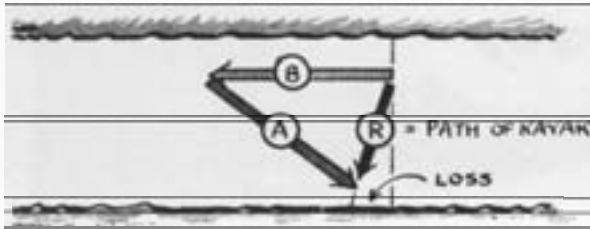
Let us now take a more important problem, i.e.: when the lines of action of the two vectors do not coincide. This is represented by the same vector as before (B), 4 m.p.h. The speed which the kayak travels is 5 m.p.h.

Connecting the end of (K) with the beginning of (A) we can calculate the resultant (R).



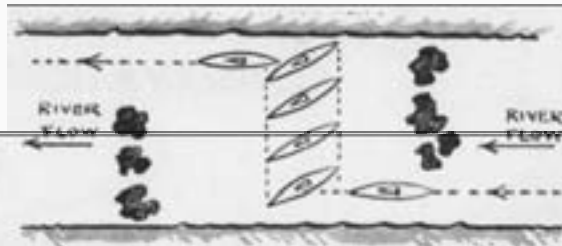
This means that the kayak will "traverse" the river at 3 m.p.h. (The angle ϕ is approx. 37 degrees) Notice that if the speed of kayak, or the angle between A and H is altered, K will also change.

E.G. if the speed of kayak is 4 m.p.h. only, the resultant will point slightly downstream i.e. the kayak is carried downstream.



The canoeist's problem is to select his speed and angle in order to arrive at a pre-determined point—perhaps a rock midstream, etc.

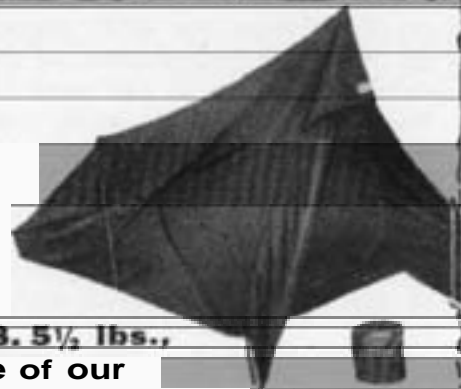
I have found the following idea most useful when shooting rapids: after negotiating rapids we sometimes find that it would be more advantageous to shoot the next rapid from a different point. Here is what I mean:



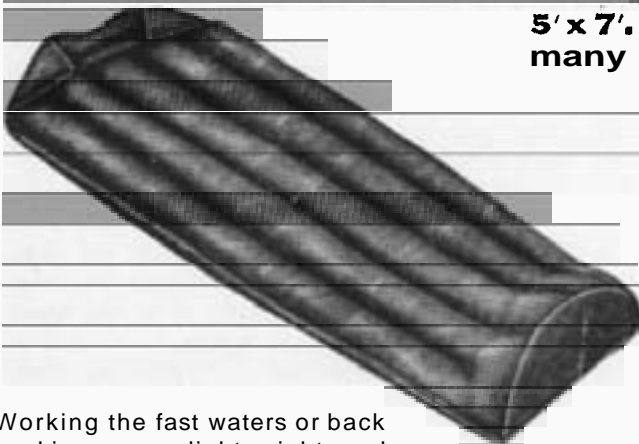
Current would not allow us to turn and paddle over to the other side, for fear of being washed onto the rocks. Instead, after shooting Stage 1, we back-water, thus "reversing" the motive power. Selecting the correct angle to match the current, we can transverse to the other side. Notice that no "altitude" has been lost, and also that it is incorrect to rush down a rapids to find ourselves confronted with obstacles we are unable to avoid. Instead, we use our heads. and with the help of a little bit of science make fun more enjoyable.

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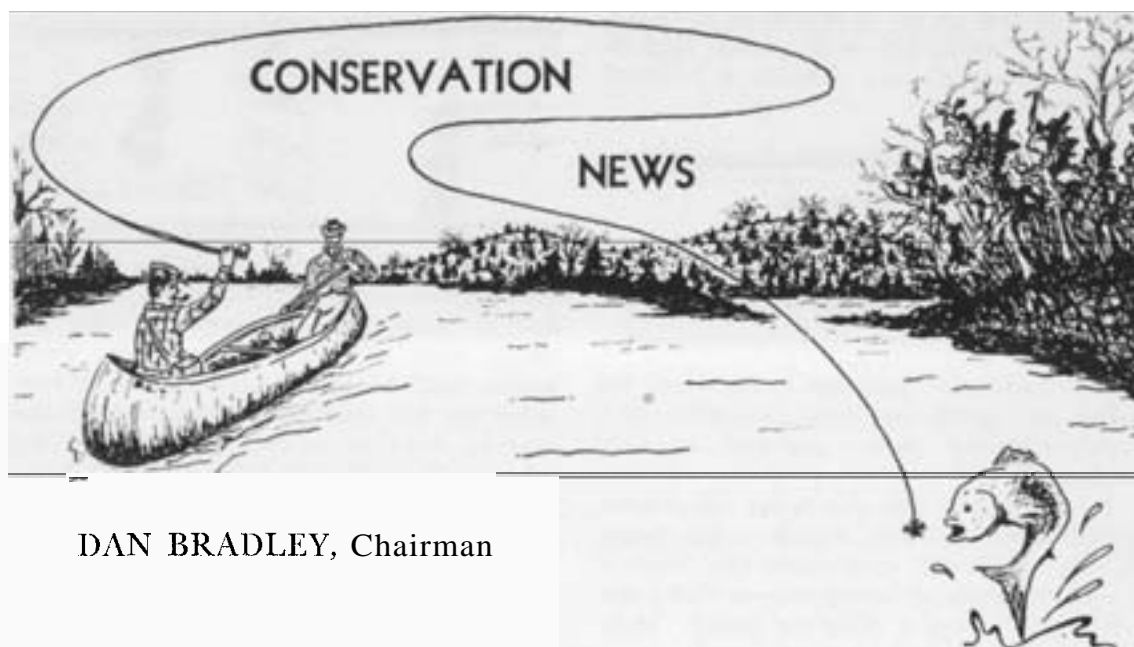


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DAN BRADLEY, Chairman

Time was when a man who needed to get away from ~~the~~ daily pressures and get a longer perspective on the really significant things in life need only grab his fishing pole and amble out to the woodland stream beyond the hack pasture. Today it isn't quite so simple. Most of us, surrounded by our frenetic, noisy "civilization," must now drive many hours to ~~find~~ comparable tranquility and peace of mind. Our wilderness isn't what it was.

Robert ~~Marshall~~ a great outdoorsman and one of the first national Superintendents of Parks, once pointed out that "The wilderness is unique esthetically in that it stimulates not just the sense of sight, as does art, nor just the sense of sound, as does music, but all of the senses which man has."

Through our sense of sight, we can perceive the pattern of the trees against the lake sunset, and the clew-sparkled cobwebs in the dawn.

With our sense of hearing, we perceive the roar of white water ahead, and the wild cry of the loon in the heavens.

Through our sense of smell, we perceive the aroma of the pines and of the flowers, the whiff of a passing wood kitty—and the sniff of tomorrow's rain.

With our sense of touch, we can feel the cozy snugness of a warm bunk in our

tent on a cool night—a sensation which cannot be found in any four walls on earth.

Even our sense of taste is stimulated by the wilderness—for the steak may be burnt and the corn roasted to a crisp, but still it is more wonderful than anything the finest chef can dream up.

And even our "sixth sense"—call it hunch, intuition, perception, or what you will—that too is immeasurably sharpened by the wilderness.

And it might be added that the wilderness is a great teacher, in big things as well as little things: it teaches us not only independence and self-reliance but also, paradoxically, our inescapable interdependence upon each other.

All this is the wilderness—"the singing wilderness"—to which we return ever and again for spiritual regeneration; all this, a hundred times over, rolled into one vast immensity that is for many of us the most perfect experience on earth.

But our wilderness is shrinking fast and it will take a bit of doing just to hold on to what remains to us. And if we still prize the incomparable freedom of the woods and the glory of the wilderness, it behooves us—each and every one of us—to take an active part in ~~the~~ crusade for its preservation, for ourselves and for those who follow us.

Perhaps this expresses, as neat as can be in a single phrase, the basic philosophy of the AWWA. ENJOY, AND PRESERVE, OUR WILDERNESS WATERWAYS!

CONSERVATION IN PRACTICE

Just how we should choose the issues on which the AWWA should stand and fight is the subject of lively correspondence among members of the Conservation Committee and other Affiliation leaders. I think we are all agreed that the most important national issue at this time is the Wilderness Preservation Act, S.1176, mentioned in this column in the last issue. This legislation declares it the policy of the Congress "(1) to secure the dedication of an adequate system of areas of wilderness to serve the recreational, scenic, scientific, educational, and conservation needs of the people, and (2) to provide for the protection of these areas in perpetuity."

It should be emphasized that *no* change in administration of these areas is contemplated: they will continue under the jurisdiction of the respective bureaus exactly as they have been. Additions to the System may be made by Executive Order, but eliminations may be made *only* by Act of Congress. There seems to be some little opposition from commercial interests who for obvious reasons don't care to leave our wilderness areas "frozen." A mere stroke of the pen of a Cabinet officer was all it took to lop over 50,000 acres off the Three Sisters Wilderness Area this winter—because lumber interests wanted it for logging. Your favorite wilderness may be next, so get out *your* pen and write your Senators *and* Congressmen to give their strongest support to the Wilderness Preservation Act.

A companion measure is the Outdoor Recreation Resources Review Hill, S.846, HR.3592, which would set up a bi-partisan commission to make a three-year study of all our outdoor areas and evolve a long-range policy for their use. Such long-range planning would help to lessen the ever-sharpening conflict between *commercial* and recreational interests.

* * *

Another way of pushing Conservation

is through local citizens' groups: in highly industrialized southeastern Pennsylvania the Citizens Creek Valley Association of Delaware County is vigorously plugging a plan to preserve as natural woodlands and county parks both shores of the county's four major streams. A similar group is working on the Brandywine, and both groups have the active support of our Huck Ridge affiliate. It seems to us a wonderful idea, worthy of being taken up in other populated areas.

Likewise Dr. J. W. Johnston and his friends on the Potomac have over recent years been doing a lot of heroic legwork among riverside landowners and state Conservation departments in an effort to preserve the Cacapon as a wilderness riverway. Local groups of conservation-conscious citizens can do a great deal to stimulate the preservation of riverside woodlands as areas for quiet recreation, and they should have the *strong* support of AWWA members and affiliates.

By the way, there has been a slight change in our committee. As you *may* have noted above, we have a new chairman—a complete neophyte in the field who is playing strictly by ear (and learning fast the endless ramifications of the subject!). Oz Hawksley has done a fine job getting the Conservation Committee organized and going—the roughest part of any function—and he will continue as an *invaluable* member of the committee.

GLEN CANYON NEWS

We have a letter from Dr. William R. Halliday (287-7th Ave., Salt Lake City, Utah), who has been looking into the closing of the canyon to all boating. To summarize: The Bureau of Reclamation has a rather dubious legal basis for its authority, and quoted to him several acts that didn't apply. Only minor work has been done—and the river is definitely not blocked. Congress has not yet appropriated the money for the dam—and may not do so in this year of economy. *More* than 80 people have already made the trip this spring.

He suggests that you write your Congressman to put an *end* to this billion-dollar, pork-barrel, silt trap.

News Flash — Glen Canyon Outlet For Boaters

A nineteen mile jeep trail is being bulldozed through rough terrain between Wahweap Creek and Kane Creek which will permit exit of river runners from the Colorado River above the Glen Canyon dam site, Under Secretary of Interior, Hatfield Chilson has announced. The trail will be ready for use on June 1st.

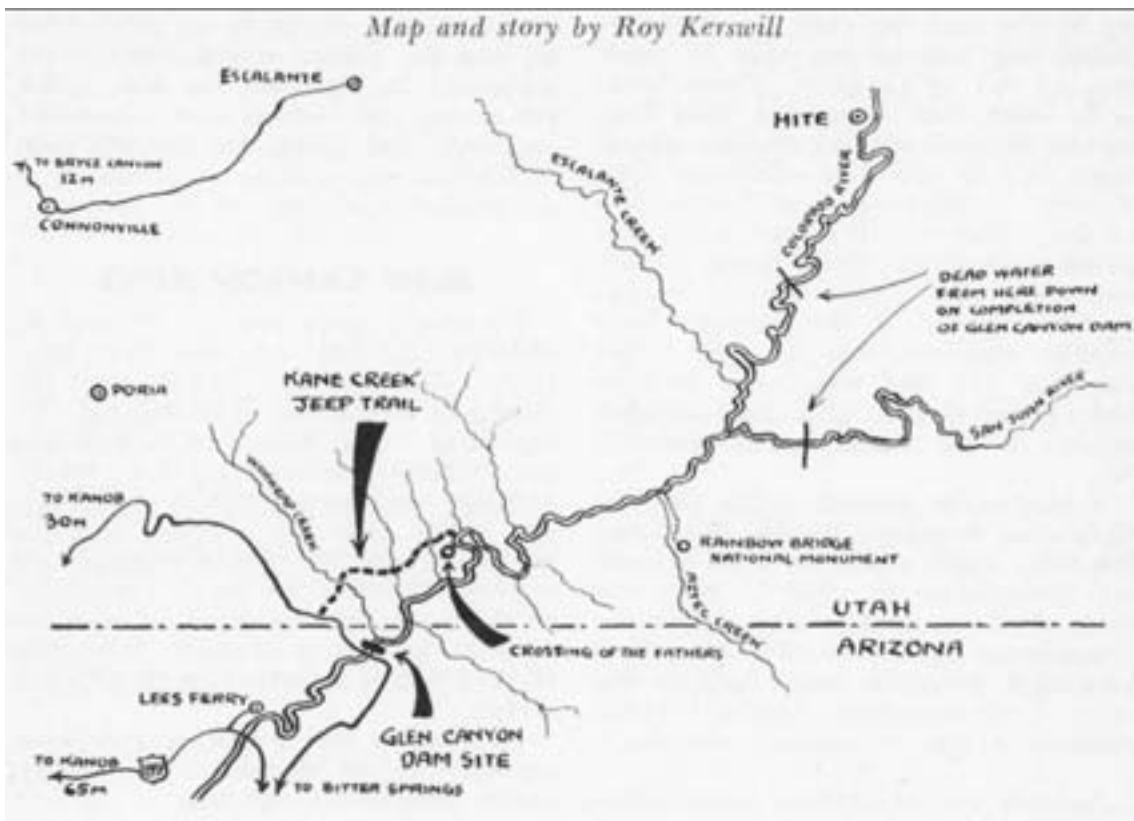
"The jeep trail is a necessity for completion of required field work on schedule" Secretary Chilson said "Since it will be impossible to maintain boat passage down the river through the Glen Canyon construction area, boating parties will be permitted to use this trail for exit from the river at Kane Creek."

Commissioner of Reclamation W. A. Dexheimer warned that the trail which is being roughed out by bulldozers is very rough and suitable only for travel by jeeps and light trucks with a high center. The trail will take off from the new U. S. alternate highway No. 23 leading from Kanab to the Glen Canyon dam site near the head of Wahweap Creek. Alternate U. S. 89 is also under construction and not suitable at the present time for normal automobile traffic.

Glen Canyon is a precipitous gorge with no avenue ■ exit between Hite, Utah, and Lee's Ferry. It was originally planned to provide a trail down Wahweap Canyon but this proved too hazardous and subject to the dangers of flash floods and was abandoned.

The Kane Creek jeep trail will terminate at the river at the historic Crossing of the Fathers. It will make possible boating trips of about 120 miles from Hite to Kane Creek. The Crossing of the Fathers is the location where Father Escalante, in his early (1776) exploratory travels, found a crossing of the river barrier.

Access to river at Kane Creek will also allow boating parties to reach Aztec Creek, which is the river access trail to Rainbow Bridge National Monument. Aztec Creek is 18 miles upstream from Kane Creek. Creation of the Glen Canyon reservoir will provide a water route nearly to the foot of Rainbow Bridge.



FOREIGN EVENTS

For members who may be going abroad this summer, there are a number of interesting cruises, races, etc. For your convenience, we list a few of these. Further information may be obtained from R. E. McNair, 32 Dartmouth Circle, Swarthmore, Pa.

These European white water races will be very interesting for any American paddlers who visit Europe this season. You may compete in the international ones but be sure to take out a membership in the American Canoe Association before you go. Only in the World Championship must American entries be chosen by the American Canoe Association.

RACES

- April 21 4th Criterium International ski-canoe-kayak at Les Contamines-Montjoie (French Alps)
- April 28 International Slalom at Diekirch, Luxembourg
- May 5 Luxembourg National Slalom Championship at Diekirch
- May 19 Slalom at Granges, Switzerland
- May 30 River race, Diekirch to Keisdorf, Luxembourg
- June 9 14th Criterium International de la Riviere Sportive, race on the Vezere River, France
- June 22, 23 Swiss Slalom Championship at Thoune
- July 20 International Slalom at Geneva, Switzerland
- July 27, 28 **WORLD CHAMPIONSHIP SLALOM AT AUGSBURG, GERMANY**

If you are going to be in Europe this summer why not join one of these international cruises by canoe or foldboat:

CRUISES

- June 1-8 The Saar, Merzig to Trier, class 1, Germany
- June 8-10 The Ardeche, Ruoms to Saint-Martin, class 2, France
- June 9-15 The Mosel, Trier to Coblenz, class 1, Germany
- July 14-15 The Chassezac, Les Vans to the Ardeche, class 2, France
- July 14-28 The Stromelbe and Plauer Kanal, Schandau to Brandenburg cl. 1 East Germany
- July 22-31 Charlottenberg to Karlstad on the Vanersee, Sweden
- July 28-Aug. 11 Plauener Havel canals and lakes. Cl. 1, East Germany
- July 29-Aug. 8 The Danube, Passau to Vienna, class 1, Austria
- Aug. 1-8 The Drina, Foca to Zvornik, class 2 to class 5, Yugoslavia

International Wild Water Racing Rules

The International Canoe Federation has adopted rules for wild water racing at its congress in Melbourne, for a provisional period of two years. The rules are available from the Chairman of the Wild Water section (Mr. J. de Liege, 22 bis, rue de Paradis, Paris 10, France). With the adoption of these rules, the principal of world championships in wild water racing has been established. These competitions will be held at four year intervals in the even years between the Olympic games.

There are four types of boats for these races. Folding kayaks, rigid kayaks, single

canoes and double canoes. The kayaks must have a length between 4 and 4.8 meters and a minimum width of .5 meters. The single canoe must have a length between 4 and 4.3 meters, a minimum width of .8 meters. The double canoe must have a length of between 4.58 meters and 5 meters, and a minimum width of .8 meters. A competitor is allowed to take part in one class only, and the rigid kayak is not allowed in the World Championships.

ATTENTION ESSAYISTS

The editor of SPRAY (Colorado White Water Association) is looking for someone to write about 250 words on "Why I prefer to go boating on water."

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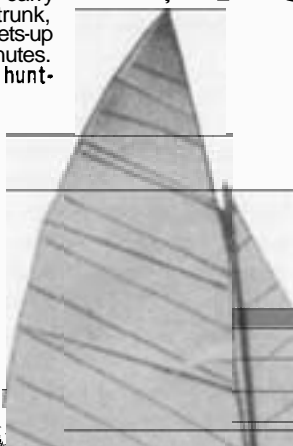
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Club Activities



"SECRETARY'S SOLILOQUY"

Spectacular growth of the AMERICAN WHITE WATER AFFILIATION may be attributed to members bubbling over with contagious enthusiasm as each copy of our Quarterly Journal is received, and to the ceaseless efforts of our ambitious Membership Committee and the wide-spread Executive Committee.

Hundreds and hundreds rallying to the ATVWA Standard have come to know of the cooperative achievements of our inspired Conservation Committee, the detailed work of our Guidebook Committee and Safety Committee. More and more members, keenly desirous of sharing their time, effort and abilities, significantly point to the timeliness of setting up an orderly arrangement of functions, and through a series of direct-by-mail conferences, AWWA Ideals, Aims and Goals are taking concrete form, with a tentative channeling of committee activities for future guidance.

Expression again should be given our determination to avoid "top-heaviness" in ~~organization~~ rather to be stressed is the AWWA philosophy of "work for everybody and everybody at work." For when we are doing what we like to do with talents we have, 'THAT' isn't work! It's a pleasure, to be sure, and the pure enjoyment derived from observing success attending our voluntary efforts is more than ample compensation.

To this end, every AWWA member is invited, yes, urged, to use his talents by volunteering to the Chairman of the Committee of his choice. As everyone knows, one gets out of any organization in proportion to what one puts in!

Thus our enthusiasm knows no bounds and we renew our pledge to find ways and means of aiding boatmen the country over in finding greater depth of enjoyment in the pursuit of their chosen sport of river touring.

Harold Kiehm

Northwest Waterways Explorers

Werner Rupp has sent in the schedule for cruises and races of this Canadian group. Space does not allow duplication of all the events, but those wishing more information should write him at 2810 Fraser St., Vancouver, B. C.

AYH Canoe Group

A canoe group of the New York American Youth Hostels is planning a very active spring. They have acquired seven new aluminum canoes and expect to make use of them. A series of canoe camping courses are being conducted every Monday at 7:30 p.m. in the Green Room of the Metropolitan New York Council Headquarters, 14 West 8th Street, New York 11, New York.

Among other activities, Lawrence Grinnell's lecture on "White Water Boating East and West" drew a packed house. Anyone interested in further activities should get in touch with Bernard Rich at the above address.

Prairie Club

Of particular interest to AWWA members in Illinois, Indiana and Michigan (we'd like to include Ohio!) is the Tippecanoe Kiver cruise sponsored by Chicago's PKAIRIE CLUB for the August 31st, September 1st and 2nd (Labor Day) Week-End. Probable put-in spot is a bridge south of US Route No. 30 west of Warsaw, Indiana, with Saturday night and Sunday night camps along the river. Harold Kiehm, Chairman Prairie Club Canoe Committee, 2019 Addison Street, Chicago 18, Illinois.

SECRETARY'S REPORT FOR 1956

This is my final report as your secretary. I should like to describe the view ~~as~~ I step down from my vantage point.

The magazine is our greatest achievement, our most needed service, antl our best salesman. Each issue is a surprise of new authors and new ideas by old authors. To these authors and to Dave Stacey belongs the credit for our success. Financially, ends just meet thanks to increased membership antl to advertising support. We can best show our appreciation for Dave's efforts by increasing the number of those who pay dues and read ~~American~~ WHITE WATER.

Our Membership Committee under Clyde Jones has clone well. We have about \$50 members compared with 400 a year ago, and new members are coming in at 4 or 5 a week. We foresee a much higher rate in 1957 when our prospectus will seek out paddlers in all corners of the country. Please give us your ideas on schemes to reach them all.

Dr. Hawksley and the Conservation Committee have been in action since August. Many critical issues come up in 1957 and this committee must convince you to take action on them. Originally this Affiliation was an answer to the need for information on safety and techniques. As interest in a magazine and in guide-books grew, it became evident that we needed the support of all who loved the waterways. Rut many of these people seek solitude on the waters. They want no part in promoting the game or in joining organizations. Yet so small a band cannot hope to preserve the beauty of our streams. We need all the paddlers there are, and we need more. We now have a second rallying cry, "conservation."

Our Guidebook Committee, led by Jeff Wilhoyte, has the difficult rating system for rivers well in hand. Now we wonder how sales are coming on Dr. Grinnell's guide to New York. Another important experiment is the mimeographing of the Pennsylvania, Maryland, Virginia antl West Virginia parts of Walter Burmeis-

ter's manuscript guide to exciting rivers. This is a Buck Ridge project under Jeff Wilhoyte.

Donn Charnley now has the Safety Committee under way. It must play an important role in the coming year with distribution of a safety code in this antl future issues.

Many more services are needed antl I hope that real progress will be made on white water manuals, on instruction movies and slide talks, and on instruction courses.

My job as secretary has been both administrative and promotional. Since membership dues go entirely for our magazine, the secretariat expenses are paid by the affiliate club dues. ~~The~~ deficit was carried by Huck Ridge Ski Club as a public service.

Gradually our organization evolves. We seem headed toward a system in which the club representatives elect the executive committee which elects the secretary, who appoints the chairmen. Despite our informality we have a closely knit team, antl this is due to a friendly flurry of carbon copies that keeps everyone in the know. As we grow I hope we remember that the ideals and the spirit are important, and that organization must be flexible to suit a changing situation. Many of the finest people love our sport for its simplicity, so let us have no ~~more~~ organization than is needed to achieve our goals.

It is with great pleasure that I turn the Secretaryship of the Executive Committee over to a man with a fine background of canoeing and outdoor life, a man who is on fire with enthusiasm. Your Executive Committee has elected Harold Kiehm of the Prairie Club in Chicago. Let us start "Deacon" off with a rousing cheer. And let us help him by talking up our Affiliation, by dreaming up new ideas, and by finding new talent for the many ~~jobs~~ begging to be done.

I wish to you all a very happy season on the water.

Bob McNair

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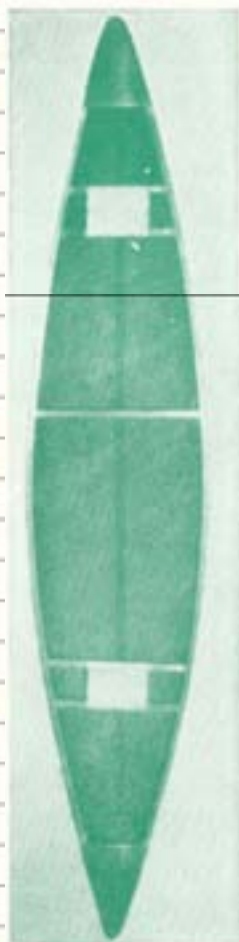
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