Learn to Row Open Water:

A Sculler's Guide

Richard Eldridge Copley
May, 2004

Learn to Row Open Water:
A Sculler's Guide

Lesson One:	**The Rowing Motion on a Sliding Seat.** **Release--Recovery--Catch--Drive--Release--etc.**
Lesson Two:	**What's The Worse Thing That Can Happen?** **Swim-&-Recovery (and rowing again in 30 seconds).**
Lesson Three:	**Rigging the boat with Oarmaster® and oars.** **Safety equipment.** **Launching & Landing: Between the dolly and the deep blue sea.**
Lesson Four:	**Rowing techniques in chop, swell, and boat wakes.** **Local navigation; Rules of Right of Way; common hazards.**

A Brief Word About Some Technical Terms:

Barry Strauss, author of *Rowing Against the Current: On learning to scull at forty*, put it this way: "*Rowing* refers to a sport whose practitioners use light, narrow boats propelled by oars. The practitioners are known as *rowers, oarsmen, or oarswomen*; the boats are known as *shells*. In what is known as *sweep rowing*, each rower works one long oar. A shell comprising two rowers, each working one oar, is called a *pair;* one with four rowers, each working one oar, is called a *four*; and a shell of eight oars, four each side, one for each of the eight rowers, is called an *eight*, which also carries a *coxswain*, who steers the boat.

"Now give a rower a pair of two short oars, rather than one long one, and it becomes possible for one person to row a shell by himself. Now things begin to get interesting. What is lost in camaraderie is gained in symmetry and speed. [And freedom on the water, especially open water.] All things being equal, a person rowing a pair of short oars will be more efficient than two persons each rowing a long oar. Such a short oar is called a *scull*; two such oars are called a pair of *sculls*. a shell worked by sculls is called a *sculling boat* or a *scull*; the rower working it, a *sculler*; he rows or *sculls* the boat. A shell worked by one sculler is called a *single* or a *single scull*; one worked by two scullers (for a total of four oars) is called a *double* or *double scull*; one worked by four scullers (a total of eight oars) is called a *quad*; one also finds a scull worked by eight scullers (a total of sixteen oars), called an *octuple*, but it is very rare indeed."

Open water rowers are scullers rather than sweep rowers. On the ocean, relatively stubby and robust open-water versions of single sculls, double sculls, and quads rule the waves; sweep rowers are not so quick to balance the boat and flatwater shells are invariably too fragile for the sea.

Lesson One: The Rowing Motion on a Sliding Seat.

1.1 Adjusting the footstretcher:

Before even starting to practice the rowing motion on a sliding seat, the rower must adjust the footstretcher to fit the length of the rower's legs to the length of the slide that will be used. The correct adjustment is extremely important, but it is easily found. An article in *Open Water Rowing* (Fall, 1998) describes it in these terms:

> "Get into the shell and sit at the finish position--legs down, leaning back about 10 degrees. Then swing the oars into the finish position, where you would release them from the water. If the footstretcher position is correct, you should be able to swing the oars through until they are an inch or less from your ribcage. In that position, if you imagine the lines of the oars drawn out through your body, they should intersect on your spine.
>
> "If the footstretcher is too close to you, you'll have too much room between your oars and your ribcage, which is a very unstable finish position. If the footstretcher is too far away from you, your torso will stop the complete swing of the oar handle.
>
> "Adjust the footstretcher as needed, then count the number of attachment slots that show between you and the footstretcher. That's your setting." [Notice that your setting may differ on the two types of footstretchers we have in the club's Oarmasters, so measure yourself on both types and make note of both settings.]

1.2 Sculling Technique. (This section is taken almost verbatim from *The Complete Sculler* by Richard Burnell, champion English sculler):

"Sculling is a precise technical operation. It is difficult to think of any other sporting activity which calls for such a complex series of movements, and the inter-action and coordination of so many different muscle groups.

"Not all successful scullers look alike, of course. They develop individual styles, and if they are successful we can hardly say that they are wrong, though some succeed by brute force, and perhaps could have been better still if they had also been more skilful. But, basically, nearly all good

scullers are good because their technique is good. Certainly those lower down the scale are most likely to progress if they pay attention to technique.

"It is difficult to describe sculling technique in writing, because sculling is a continuous, flowing action, and one can only describe it, in writing, by describing a series of separate points. But there is no other way.

1.2.1 Basic Positions.

"Remember that the basic positions in sculling are not static, though they are necessarily described as such. They are important because correct positions lead to correct movements.

"**The Feet.** The correct position for the feet on the stretcher is the same as the position in which you would naturally place your feet on the floor to do a 'deep-knees-bend' exercise. This is not surprising, as the movement of sliding forward in a sculling boat is similar to doing a 'deep-knees-bend' sitting down.

"The heels should be an inch or two apart, with the feet splayed at an angle of about 25 degrees. This provides a firm base on the stretcher, just as it does on the floor.

"The Knees. At the beginning of the stroke the knees should be opened to approximately the width apart of the armpits. A man with a short body and long legs may need to open the knees a little wider, to get his full reach between them. A man with short legs and a long body may hold them a trifle closer, and swing over them. But the knees should never be closed, nor should they 'flop' apart. And, of course, they must always be symmetrical.

"Sitting Position. The sculler should sit squarely on the bones of his posterior, with his weight evenly distributed. He should sit up to his full height, like an alert spectator at an exciting football match. The back should therefore be straight, but not stiff.

"The Head. If the eyes look out level from the head, focussed on a point about 30 yards astern, the head will naturally maintain its proper angle with the body. At the catch the chin will be slightly raised, and at the finish, lowered. The neck should be firm but relaxed, and the head must never be allowed to loll sideways, nor to fall forward onto the chest.

"**Hands and Wrists.** The correct hold of the sculls (note--not *grip*) is of paramount importance. The scull handle is held between the roots of the fingers and the fingers themselves, not in the palm of the hand. The thumb must always remain over the end of the handle, exerting a light pressure outwards against the button, never wrapped underneath the handle.

1.2.2 Basic Movements:

"The Legs. There have been many arguments as to whether the legs should be regarded as a primary or a secondary source of power, or, if you like to put this very unscientifically, whether they are directly propelling the boat, using the body and arms as connecting links, or simply propelling the body, from its optimum position for taking the catch, to its optimum position for taking the finish.

"The argument itself may be academic, but it is useful if it helps us to assess what the legs have to do.

"Of course, the legs do propel the boat. If you hold your blades square in the water, and push with the legs, without swinging the body back or bending the arms, the boat will move forward. And of course the legs also propel the body, from the front stop to the back stop. ["Front" and "back" of the sculler and his slide, not front and back of the boat.]

"The problem is that these two functions are antagonistic. For the legs can drive the body back much faster if the body leaves the sculls behind--and this is precisely what they will do, if given the chance.

"To be effective, therefore, *the power of the legs must be countered by the muscles of the lower back and loins, which must try not to be driven back towards the backstop. By resisting the legs, this diverts the thrust, upwards, through the body, to the sculls.*

"So, during the stroke, the legs must thrust steadily, but not explosively, backwards. They must work symmetrically, with the same thrust applied through each leg, and the knees moving down together. Ideally this movement should last almost to the finish of the stroke, and, generally speaking, the better the sculler the more nearly will he achieve this coordination of legs and slide.

"At the finish the knees should be pressed down firmly, and should remain so until the body swings forward, through the perpendicular, towards the next stroke. As the sculler slides forward it is important that the knees rise, and open, symmetrically, maintaining equal pressure with both feet against the stretcher.

"Swing from the Hips. The use of long slides has largely replaced the long swing which used to be fashionable. Nevertheless there is always a considerable element of 'swing' from the hips in a sculler's movement. Here is a good example of how a correct *position* will lead to a correct *movement*. For if the sculler is sitting up at the finish, with a strong back, and his weight evenly distributed on his seat, he will naturally *swing* forward from his hips, on the centre line of the boat. What is more, his weight will at once be transferred to his stretcher, making for good balance. But if he is slumped on his seat like an effigy of Buddha, he will roll forward like an ungainly fat man struggling out of a deck chair.

"We call this movement the 'recovery', and its timing is important. The hands should lead the shoulders forward, as though the sculls were pulling the sculler forward, rather than being pushed forward by him. As the top half of the body swings forward, the weight is transferred from the back to the front of the seat, and as it moves through the perpendicular, but not before, the knees relax and begin to rise. The weight must be in front of the slide, and sliding and swinging must be coordinated during the forward movement, just as they were during the working part of the stroke.

"The most common faults here are, (i) swinging forward too far, too soon, so that the shoulders are forced to lift to avoid the knees as the sculler

approaches the front stop, and (ii) delaying the swing, which leads to 'diving' over the stretcher.

"The Shoulders. The correct action of the shoulders, at the finish of the stroke, is the same as the action in 'Rolling the Shoulders', with or without weights. The shoulders are drawn upwards, backwards (as far as possible), and downwards.

"Note that this is another movement which cannot be made correctly unless the body is in the correct position. [The footstretcher must be perfectly adjusted for this shoulder-rolling to be possible: if the sculler is too close to his work, he cannot possibly roll his shoulders back because his hands are cramped in his stomach, so that he cannot even draw his elbows back; and if the sculler is too distant from his work, he cannot do it for the opposite reason--his scull handles are too far away.]

"The Arms. At the catch the arms should be relaxed, and straight. Some people find it more natural to have slightly flexed arms, and this is acceptable. But it is not acceptable to try to 'take the beginning' with the arms--'snatching' as we sometimes call it. This fault is usually caused by the sculler being heavy-handed and slow on the catch--his legs do not spring his body back quickly enough, and he tries to remedy this by snatching with his arms.

"The arms should begin to flex naturally, about a third of the way through the stroke, and their contribution to the propulsion of the boat follows this, building up to a maximum draw at the finish. Once the slide has reached the backstop, and the body has completed its backward swing, the sculler really has only his arms left. And, at the end of the working stroke, this is the moment when the boat must be accelerating to its fastest speed. So it is really necessary to have the power of the arms at this point. Furthermore, the whippy strength of the arms is good for this accelerating action, but not at all good for taking the sudden, heavy weight at the beginning of the stroke.

"If the arms tire excessively, or suffer from cramp, it is nearly always due, either to snatching at the beginning, or to gripping the scull handles too tightly.

"At the finish the arms will move correctly if the shoulders move correctly. the elbows should be close to the flanks, but not constricted, and the arms should be drawing straight back, not outwards from the body. If the sculler is rigged too far from his work he will find his scull handles moving apart at the finish, instead of coming in below his ribs, and he will be unable to get this 'backward' draw.

"As the sculls are extracted, the arms drop to provide clearance, and are immediately, but not violently, straightened, to commence 'leading' the body forwards again. The recovery has been likened to a billiard ball bouncing off the cushion. It is not an entirely happy comparison, for there must be no 'bounce' at the finish. But the smooth resilience, with which the cushion of a good billiard table reverses the direction of the ball, does suggest the way in which the hands and arms come into, and away from the body, without check or hurry. [Other coaches compare the scullers hands at the finish to a link on a bicycle chain going around a sprocket.]

"Hands and Wrists. Try this experiment with a length of thick piping, or a round pole resting on the backs of two chairs, so that it is free to rotate. Place the tips of the fingers on the pole, and rotate it by rolling the fingers away from you, keeping them in close contact with the pole. The top joints of the fingers will disappear 'over the horizon', followed by the middle joints, the wrist will rise slightly, and the crook of the thumb will come into contact with the underside of the pole. This is the movement of hand and wrist in squaring the blade, prior to taking the catch.

" Rowing coaches sometimes speak of 'raising the hands' to put the blades into the water, but it may be better to think in terms of spring off the stretcher, which causes the body to rise, putting the blades into the water. The position of the hands and wrists does not change until the arms bend, when the wrists begin to rise. The 'arching' of the wrist increases as the hands come in to the finish, not because there is any deliberate raising of

the wrists, but because, as the elbows bend, the forearm drops, increasing the angle with the wrist.

"At the finish of the stroke the rotation of the shoulders 'unrolls' the wrist again. If you return to the pole, which we used to demonstrate the beginning of the stroke, and now roll it back towards your body, letting the fingers uncoil, you have the finishing movement of hands and wrists.

"This movement, with a downward pressure on the scull handles, extracts and feathers the blades. The wrists are then dropped, and the scull handles lie, not in the palm of the hand, but beneath the roots of the fingers. Immediately, the hands move away from the body, clearing the thighs, and begin to lead the body forward to the next stroke. This sequence is probably the most difficult of all sculling movements to describe.

"Remember that the scull handles should never be gripped tightly, and that they are held by the fingers, and the roots of the fingers, rather than by the palms. In practice it is unusual to have the sculls knocked out of the hands, even in rough water. But it is important that the rubber grips should always be in good condition, with plenty of 'tread'. For racing, and particularly in wet weather, or hot weather when excessive sweating is likely, it is advisable to rub a little powdered rosin on the hands. This does not last indefinitely, so take a little in a matchbox, in the bottom of the boat, and apply it just before the start.

1.2.3. <u>The Continuous Cycle.</u>

"I have now tried to describe the basic positions and movements in sculling. But sculling, as we have already pointed out, is not a series of positions or movements, but a live and fluid cycle. In training, the sculler must direct his attention to a succession of details, but never forgetting that it is the continuous cycle which matters.

"Coming Forward. When we talk of the 'beginning' and 'finish' of the stroke we are really referring only to the propulsive part of the cycle. In considering the complete cycle it is more convenient to begin from the

backstop, whence, having completed one stroke, the sculler moves forward into the next.

"So long as the hands 'lead' the body away from the backstop, the swing is likely to follow correctly. The knees should be held down as the body swings through the perpendicular, but should not be held down artificially after this. The blades should be well clear of the water during the forward swing, and should remain feathered as long as possible, to reduce wind resistance. As the sculler approaches the frontstop, he should get the impression that his hands are rising up in front of him. They do not really rise, until the blades are squared for the catch, but they seem to do so, relative to the movement of the shoulders.

"Traditional teaching used to be that the recovery, and initial swing forward from the backstop, should be executed quickly, and that the pace of the slide should slow down as it approaches the frontstop. We have seen variations over the years, including a deliberate check at the finish and acceleration towards the frontstop. My personal belief is that the speed of the boat through the water dictates the pace at which the sculler slides forward. He should let the boat freely carry him out, but always retaining control, through the pressure of his feet on the stretcher.

"**The Stroke in the Water.** If you sit at your frontstop in a stationary boat, with blades flat on the water (or in the air, if your balance is good enough), and then drive with the legs, the boat will move backwards. This is because the sculler, and his boat, together constitutes a 'mechanical system', of which the sculler is by far the heavier part. If the sculler moves in one direction, the rest of the system (i.e., the boat), will move in the opposite direction, if it is free to do so. Only when the system as a whole has created a point of resistance, outside itself, can it be moved in the desired direction.

"This resistance is supplied by the action of the blades in the water. But water itself has inconvenient properties. You can submerge your hand and move it slowly, without experiencing any significant resistance. But if you try to move your hand very fast, the resistance will be so great that you

may be unable to keep it submerged. And if you take a swipe at the water, from above the surface, you will just create a big splash.

"These two factors together create the problem in taking the beginning in sculling. The whole system is moving past the water. To create further propulsion the blades must 'catch up' with the water, and impart movement to it. If they are too slow they will 'back-water' the boat, instead of propelling it forward. If they are too fast they will bounce off the surface. And to move them at all, the sculler has got to reverse his own direction of movement, relative to the boat.

"The solution to this problem cannot be reduced to words, but must be learned by experience. It is a problem of coordinating the thrust of the legs against the stretcher, the springing back of the body, and the burying of the blades in the water. The indicators to watch are the blades at the moment of entry, and the stern of the boat. If the blades are moving too slowly they will create 'back-splash', towards the bows. If they are moving too fast they will create splash towards the stern. If they are moving at just the right speed, they will create exactly the same splash as if you drop them squarely into the water, when the boat is stationary--just a few drops from both front and back surfaces.

"A moving boat cannot avoid creating some turbulence in the water. Correct timing of the spring at the beginning of the stroke minimizes stern turbulence. An observer on the bank will be able to note the amount of check on the forward run of the boat. But the sculler himself cannot see this, and can only judge by his stern wave.

"Having taken his beginning, the sculler must then try to accelerate all the way to the finish. *The pressure must increase, because the moment it slacks off, the resistance of the water to the working surface of the blades will disappear*. [But some coaches argue that the blade 'stalls' during that part of its sweep through the water when it is at a right angle to the boat (just when many scullers think, falsely, that they are getting maximum efficiency), therefore they argue for 'two-phase' rather than steady effort on the blade, pulling hard at the beginning and end of the drive, with slightly reduced effort in the middle.] In an extreme case, if the blades actually

decelerate, they will, of course, begin to back-water, and positively stop the boat.

"If you reflect that the blades are in the water for less than half the time taken for the complete stroke cycle, which means that the boat has got to keep on running, without propulsion, the truth of the old cry that 'races are won between the strokes' is very apparent.

"And so we have reached the moment of truth, which is that *the sculler's task is to impart maximum speed to the boat at the* ***finish of the stroke.***

"Only the spring from the stretcher can move the blades fast enough to catch the water at the beginning of the stroke. Only if the back is held firm can the thrust of the legs be transmitted to the blades. Once legs and back muscles are fully committed, only the draw of the arms can impart the necessary acceleration of the blades, towards the finish of the stroke.

"Some experienced scullers gain power at the finish by 'pulling up' the body on the scull handles. This is not wrong, but it is not a practice I would recommend to those who are not experienced. If a sculler is visibly pulling up his body, at the finish, he is almost certainly overdoing it, and you will probably also be able to see that he is 'bouncing' his boat in the process.

1.2.4 Balance.

"In some ways balance should perhaps have come at the beginning of this account, for no one can scull well until he is comfortable and confident, and no one can be comfortable and confident without good balance.

"Balance is theoretically more difficult in a sculling boat than in a sweep rowing boat, because sculls are shorter than sweep oars (the longer the pole which a tight-rope walker uses, the more secure is his balance). But a sculler has the advantage, over the oarsman, that he is handling the sculls on both sides of his boat, and knows that nobody else is upsetting him.

"It is possible to prevent a sculling boat from rolling by allowing the blades to brush lightly on the surface of the water, and most scullers do this, to a greater or less extent. But this practice is, in effect, concealing the causes of imbalance, whereas the Complete Sculler must aim to achieve positive balance.

"An empty sculling boat should balance itself on an even keel, so unsteadiness can only be caused by outside agencies--the water, the wind, or the sculler himself. It often is caused by wind and water. But there is no future in giving up as a bad job, on that account, because, when it comes to a race, it is the sculler who is most skilful at countering these inconveniences who will benefit. The world's best golfers will devote many hours to practising a single shot. The same is true of billiards and tennis players. A cricketer, or a jumper, may have to take infinite pains over such an apparently simple problem as how many paces he must take, and how long they must be, to bring him to the bowling crease, or the take-off board, at the optimum moment. Yet many scullers, even in the higher echelons, imagine that good balance will simply 'happen', if they go on sculling for long enough. That is precisely what it will not do, unless they take the trouble to find out what *they* are doing to cause imbalance, and to correct it.

"A boat will roll if anything is done on either side of its centre line, which is not exactly balanced on the other side. The sculler can only 'do things' to his boat at the points at which he is in contact with the boat. There are only three such points:--

(i) *The feet are in contact with the stretcher.* So the pressure on each foot must be equal at all times.

(ii) *The body is in contact with the seat,* and the centre of the seat is on the centre line of the boat. Therefore the sculler's weight must be equally distributed on both buttocks, the body must move straight up and down the centre line of the boat, and the legs must move symmetrically on both sides of the centre line.

(iii) *The hands are in contact with the sculls*, which rest in the rowlocks. This is the most sensitive point of contact, because the rowlocks are far from the centre line. Raising or lowering a

> hand varies the downward pressure on the rowlocks, whether the blades are in the air, or the water. Also, the outward pressure, which must be exerted by the thumbs to keep the scull buttons pressed against the thole pins, has the effect of transferring weight to the sill of the rowlock. So, too, will any increase in the pull exerted against the thole pin during the stroke.

"The forces applied at all these suspension points are acting on the balance of the boat at all times. Balance, or lack of balance, is a combination of them all. However experienced the sculler, he should devote a few minutes, once or twice during every outing, to consciously and methodically checking through the three suspension points. It is best to do this in stages. First scull ten strokes, concentrating on the feet on the stretcher, then ten strokes checking that the swing is straight, the weight evenly distributed on both buttocks, and the knees symmetrical, and a final ten strokes concentrating on the hands, and the forces which they are applying to the rowlocks.

1.2.5 Methodical Practice.

"It is not only balance which calls for *methodical* practice, though this happens to be an easy example to illustrate in words. All the factors discussed above need to be learned, and perfected by practice.

"Presumably nobody goes on sculling, year after year, without some natural ability, and a considerable love of the sport. So there must be something wrong with a sculler's technique, if he does not improve. If he wants to improve, he must find out what is wrong, and then put it right. The oarsman should be able to rely on the coach. But the sculler gets very little coaching. Therefore he must search out his faults for himself, and set about correcting them, one by one. To achieve this he must plan a programme, for every outing, for every week, and for every month, and consciously and methodically work at each point in turn. As I have repeatedly said, *it is no good 'just going on sculling and hoping that it will come right'.* **It will only come right if you put it right.**"

1.2.6 A Shorter Version of Sculling Technique.

At the *Release*, in the position used to set the adjustment for the footstretcher, the sculler swings forward with the hips as his hands move forward rapidly, pulling in train the arms as the knees come up slowly. Approaching the frontstop on the *Recovery*, he flips the oar handles and the blades are dropped into the water at the *Catch*. With fingers hooked over the handles, the sculler, sitting up tall, uses, in turn, muscles of legs, back, and arms, on the propulsive *Drive* of the seat on the slide toward the bow.

Lesson Two: What's the Worse Thing That Can Happen?
Swim & Recovery (and rowing again in 30 seconds):
An exercise in water safety and sculler's confidence.

2.1 <u>When in Trouble, Use your Brain.</u>

The worse thing that can happen is that sculling alone and far from shore and with no one in sight you capsize/flip/dump it/fall out of the boat. Suddenly, without quite knowing how it happened, you are swimming beside the boat. At this moment, you are either in serious trouble because you don't know what to do and you are beginning to panic, which can lead to useless and even lethal activity, or you can use your brain, your most vital organ at a time like this, remember your Swim & Recovery Lesson, and systematically climb back into the boat and out of the clutches of the cold sea.

(i) **Swim the boat forward** so that **the bow is facing directly into the waves & wind**, holding on to the side of the shell just forward of the rigger. This will have three desirable consequences: 1) It will get your legs kicking and up near the surface *with your body more horizontal than vertical*; 2) it will allow the oars to swing back alongside the shell *with the oar handles pointing toward the seat* (if they weren't pointing in this direction already) *so now they will be easy to grab when you regain your seat*; and 3) with the boat head to wind it will be oriented for maximum stability in the seaway.

(ii) **Reach into the boat and slide the seat toward the bow** and away from the rigger, giving yourself more room to swim/crawl/pull yourself into shell.

(iii) **Reach across the shell with your 'bow' arm** and grasp the gunwale or deck-edge on the other side, then grasp the gunwale on the near side with your 'stern' hand.

(iv) **Kick vigorously with your legs**, getting them **near the surface of the water** and driving your body into the boat as you **pull with the far hand and push up with the near hand**.

(v) **After swinging your bottom onto the slide track** (or the seat, if possible), **grab the oar handles and swing your feet onto the stretcher**. You can now resume your exciting row.

Some additional points to remember:

1. Try to keep your head dry. A wet head leads to extreme heat loss. Do not dive under the boat to arrange an oar on the other side.

2. Never tie your feet so securely to the footstretcher that they will not slip out in the event of capsize. If, after flipping the boat, your feet are caught in the footstretcher, you have a serious but not necessarily fatal problem. The boat may turn turtle and, in any case, with your feet trapped you will find it difficult to get your head above water except for brief periods. So don't panic, don't try to swim free, just get the best breath of air possible under the circumstances and then crouch (inverted), bending your knees so that you can reach your feet and untie them from the footstretcher.

When practicing the Swim & Recovery Drill, do NOT start by rowing out and falling out of the boat. Instead, push out from the beach an *empty* shell (fully rigged), bow first; pushing hard enough that it comes to rest 10-20 meters from shore. First the instructor, wearing wetsuit & PFD, swims out and demonstrates the correct moves, finishing by sculling back to shore. Then the students, one by one, do the same maneuver. By swimming to the shell instead of falling out of it, the student learns what a PFD feels like in the water, and the shell's rigger, oarlocks, oars, and the anchor pins of the Oarmaster do not suffer the damage that often results when a shell is repeatedly tipped violently in simulated capsizes.

Knowing that you can climb back into a rowing shell and be sculling again in 30 seconds is a confidence-builder for every open water rower. The confident rower is a more relaxed rower. The accomplished open water rower is always relaxed. The key to successful sculling in rough water is to stay confident and not tense up. When the sea is awesome,

concentrate on relaxing especially the muscles of shoulders, arms, and hands. Philippe Drivet, an outstanding rough water sculler, speaks of holding the oar handles as gently as if holding a young sparrow.

Lesson Three: Rigging the boat with Oarmaster® and Oars.
Safety equipment and useful gear and gadgets.
Launching & Landing: Between the dolly and the deep blue sea.

3.1 Dropping the Oarmaster into the shell.

The drop-in rigger used in the Alden rowing shell is an awkward contraption, difficult to handle because of the sliding seat, which wants to slide even as you carry it to the boat, but the thing weighs only 18 pounds or 8.2 kilograms, so it's not a strenuous lift. Approaching the boat, Oarmaster in your arms, a fundamental question presents itself: Which way does it go? This introduces you to the major fact of life about the sport of rowing--this is a sport done while facing backwards! (Only swimmers doing the backstroke share this nearly unique condition, and they face more up than back.) Begin by aligning the Oarmaster with its rigger at the stern end of the shell and its seat at the bow end. Then find the anchor pins sticking up from the floor of the cockpit of the shell and gently place the Oarmaster's mounting brackets (near the centre of the slide) over the anchor pins. Finally, after the alignment is perfect, fit the clips through the holes of both anchor pin and bracket, making the Oarmaster secure.

3.2 Dropping the oars into the oarlocks.

First notice how the oarlock spins on the thole pin. This is the pin that the oar will push against to move the boat through the water. If the oar were to push against the other side of the oarlock--as you will probably find out by accident one day--it will not work at full pressure. The blade, being at the wrong angle, will dig in alarmingly. So *be very careful to spin the oarlock toward the shell* before opening the gate on the oarlock and dropping the oar into the oarlock. Hold the shaft of the oar near its balance point and stand on the bow side of the rigger as you do this, pointing the handle end of the oar toward the bow, the blade end toward the stern. You will have it right if the thole pin is on the outside of the oar as it passes through the oarlock; i.e., the majority of the oarlock is closer to the shell than the thole pin or pivot point on the oarlock is. *Don't forget to close the gate on the oarlock after dropping in the oar*.

But does it matter which scull goes into which oarlock? Yes, it does. You may have dropped the sculls into the wrong pins. Notice that one oar is marked with green and the other with red. These are the port and starboard colours. Port is the left side of a boat and starboard is the right side. Since scullers do their thing facing backwards, the sculler's right hand is the 'red' hand and his or her left hand is the 'green' hand. *Think "red is right"*, even as the left side of the shell is its port side. So you may have to do that first blade (or both of them) over again. And don't forget to close the gate(s) when you're finished. Both handles should now be resting just behind the splash guards at the forward end of the cockpit and you should be ready to roll to the beach after donning your PFD and putting into the shell your water bottle and whatever else goes along on this trip.

3.3 Safety equipment.

The best insurance you can have is a PFD on your back. Approximately 90 per cent of all persons who drown in recreational boating accidents in Canada were not wearing a personal flotation device. (And half of those who died actually had a PFD on board at the time, they just didn't get to it!) Not wearing your PFD is as foolish as cycling with a helmet strapped to the handlebars. Your PFD will keep your head dry if you flip and it will make easier your re-entry into your rowing shell. If you are run over by a drunken sailor, your PFD will keep you afloat as you become befuddled and immobilized by hypothermia. (At least 40 per cent of all power-boating fatality victims in Canada had a blood alcohol level above the legal driving limit.) If you find that a standard PFD inhibits your rowing motion, buy one of the light and comfortable *inflatable* PFDs.

Always carry a whistle and a bailer. Take a waterproof flashlight along if you may be out after dark. And if you have a cellular phone you may wish to buy a talk-through waterproof cover for it, which will enable you to call the Coast Guard at Star-One-Six if you need help for yourself or if you observe a maritime emergency during the course of your row. Even better than a cell phone is a VHF Marine Radio, but they cost $250-300.

3.4 Useful gear and gadgets.

Good sunglasses and appropriate clothing are useful gear. Polypropylene (polypro) long underwear is a great invention, as are

padded shorts designed for cyclists, though shorts designed for rowing may be slightly better. Many scullers like to wear rowing or sailing gloves, especially *synthetic* leather ones like Thunderwear® gloves that don't become stiff in salt water. A heart rate monitor is a very useful training device; it is strongly recommended by all scullers who have tried it. You don't need a fancy model, one that indicates current heart rate and has a 'target zone' is sufficient. Another useful gadget is a GPS. Even an inexpensive model like Garmin's **eTrex**, which Garmin calls a "personal navigator," will give you your speed in knots, mph, or kmph; compass heading; distance to go to programmable locations; time to go to reach these places; distance already rowed; average speed; maximum speed; your longitude; your latitude; time of sunrise at your location; time of sunset at your location; and it will draw a 'crumb-line' map of where you have been.

3.5 Launching the rowing shell.

The beach dolly rolls easily over the sand to the water's edge. The shell should be loaded onto the dolly with the stern of the shell at the handle end of the dolly. This makes it easy to swing the dolly at the water's edge, wheels just touching the water, and then to lift the stern of the shell and slide it bow-first into the water. If there is wind and a noticeable chop, point the bow into the wind. Walk the stern toward the water and gently put the aft meter or so of the shell on the sand alongside a wheel of the dolly. Then leave the shell there briefly while you run the dolly up the beach far enough that a rising tide will not reach it during your row.

Now pick up the stern and push the bow far enough out that the whole shell is floating. Wade around the rigger and blades and stand beside the shell facing the stern and the beach. Slide the seat all the way toward the bow. Steady the shell with your 'near' hand (nearest the boat) and gather both oar handles in your 'far' hand. (The blades should be straight out with the concave side facing up and just floating on the surface.) Now step into the shell with your 'near' foot and sit on the seat as you bring in your other foot. NEVER LET GO OF THE OAR HANDLES! As long as you hold the handles you will not capsize. Trap the handles between chest and arms as you velcro your feet into the footstretcher. Take

your time and keep your balance. After you are settled in, slowly lift one handle and then the other. Notice how the blades balance the boat.

3.6 Landing the rowing shell.

Landing is the reverse of launching. This means that as you approach the beach you must at the last minute make a U-turn and *back* the shell over the last few meters to the beach. Come in slowly. When the stern touches the beach you will be able to step out of the shell. Remember to hold both oar handles in one hand, the other hand on the gunwale, as you exit the shell. *Never push down or pull up on the rigger!* This may damage the anchor pins holding the Oarmaster to the shell. After you gain your footing, slide the oars one at a time towards the bow, placing the handles on the deck behind the splash guard. Walk around rigger and blade and pick up the stern and carry it over the sand until about a meter of the shell is stranded--enough that the shell will not float away while you retrieve the dolly.

This may be the place to mention the major maintenance problem of the Oarmaster: salt crystals in the wheels of the slide *must be flushed away after every row*; otherwise the wheels must be replaced at a cost of $120. Hose down the wheels thoroughly, flushing each side for at least 15 seconds before returning the Oarmaster to the rowing shed. In winter, the Rowing Fleet's slide-wheel washing tank, which is put out when Jericho's hose-water is shut off, makes flushing salt from the slide-wheels even easier.

Lesson Four: Rowing techniques in chop, swell, and boat wakes.
Local navigation and Rules of the Road.
Common hazards of open water rowing.

4.1 Rowing techniques in chop, swell, and boat wakes.

Flatwater rowers fear rough water, but open water rowers delight in the challenges and special opportunities offered by various rough water conditions. Experience is the best teacher. Never scull in water rougher than you can *confidently* handle. Start with a sea barely speckled with whitecaps/mouton (7-10 knot winds). Gradually sample seas shaped by slightly stronger winds. With experience you will gain increasing respect for the seaworthiness of your boat and increasing confidence in your ability to handle difficult conditions.

Ocean swell and most waves move faster than we can row. The speed of swell (and many large waves) is proportional to its height. Observe how many seconds it takes for swell in deep water to pass a fixed point (trough to trough or crest to crest of the wave) and multiply by three, which will give you the speed of the swell in knots. Open water scullers usually travel at a speed of 5-7 knots.

Rowing in big waves is both a science and an art. With practice you'll learn how to use the slide to balance the boat fore & aft, using your body weight to ease the passage of the shell through the water. Going to windward, lighten the bow as you power into the waves, timing your Recovery Phase to fit the arrival of the bigger waves. Going downwind, worry about the stern swinging out suddenly as it's lifted by a wave. Keep square to the wave. The best defense against broaching is to slide to the frontstop, bringing the stern down, digging it into the water and straightening out the shell.

As the sea gets choppy, one's first adaptation to the rougher water is to raise the height of the blades on recovery; lower your hands as they go forward. As the chop gets troublesome, you'll discover (painfully!) one of the flaws of the Oarmaster. When you must carry the blades high, you risk bumping your knuckles against the large bolt-heads holding down the

rigger. Adapting to chop and rough water, you may have to reduce the length of your slide, which will improve balance as well as save your knuckles in two-foot chop. A shorter slide may also benefit sculling in a big swell, giving you more opportunities to quickly lighten the bow or to rapidly dig in the stern in big waves. Of course, the bigger the waves, the more the experienced sculler concentrates on being relaxed. Keep the shoulders and arms loose and the hold on the oar handles light. One of life's sublime experiences is sculling downwind on a good westerly swell, sitting tall and relaxed and rowing smoothly as the big waves carry you along. At moments like this, the utility of facing backwards is re-discovered and the ancient geography of rowing is explained. An old, old advantage of rowing over paddling is realized when travelling in the company of big waves.

The biggest steep-sided or breaking waves most coastal rowers ever encounter are scary green waves in wakes generated by big yachts, sea-going tugs, or heavily-loaded fishboats passing close by. It's important for open water scullers to realize that the huge waves created in these wakes diminish in height as their V-pattern spreads out from the track of the wake-maker. Move away and you reduce their effect. Also, know that although individual waves in a wake move faster than we can row, even a rather slow sculler can keep ahead of a wake. Bowditch explains the paradox in these words:

"The time needed for a wave system to travel a given distance is double that which would be indicated by the speed of individual waves. This is because each leading wave in succession gradually disappears and transfers its energy to the following wave. The process occurs such that the whole wave *system* [the wake] advances at a speed which is just half that of each individual wave."

Consequently, scullers can practice 'catching a wave' on a calm day by finding a good wake and rowing back & forth through it! Be aware, however, that there's a Joker in the deck: There's one, rare kind of boat-generated wave that does *not* "disappear and transfer its energy to the following wave." This unusual wave is called a *soliton*. There is no escaping a *soliton*. It's a single, steep-sided wave that seems to roll on forever. It's generated when a large boat slows down suddenly, sending the *soliton*

ahead of it. If you're a good wave-watcher, you'll see this peculiarly solitary wave in the vicinity of Kits Buoy on the route to Q52 when a big tug is maneuvering to drop off or pick up a barge at Kits Buoy.

A small wake can be taken most comfortably side-on, but a large wake can capsize a rowing shell unless the steep waves are taken by turning 'bow-into' or 'stern-to' the waves. And if you're close to shore when the train of waves of a large wake arrives, remember that large waves breaking against cliffs--or even against the pilings at the Royal Vancouver Yacht Club--will give open water scullers a 'double-whammy.' As the wake arrives, you'll first experience the incoming train of waves, then the refracted waves off the cliff (or wall of pilings). The resulting confused sea is difficult to row in, so stay farther out when wakes are abundant.

4.2 Local Navigation and Rules of the Road.

Our rowing patch is bounded, in practice, by Q52, the red buoy at the Entrance to False Creek, two nautical miles away from our beach at Jericho, and by Q62, the red bell buoy also known as the Point Grey Bell Buoy, three nautical miles west of Jericho. Rowing to Q52 and back you will go 4nm or 4.6mi or 7.41km. Rowing to Q62 and back you will go 6nm or 6.9mi or 11.11km. All of this is assuming, of course, that you can row as straight as a cormorant flies. Count yourself a fast sculler if you get to Q52 in 20 minutes or Q62 in 30 minutes.

There are many Rules of the Road to be observed by boat skippers, but the Big Rule is this: *"When in command of a small boat, don't mess with bigger boats."* This may be a good place to remind scullers that it is dangerous to row in close to big ships anchored in English Bay. Garbage & fishing lines can come flying off the stern at any time, and not all bridge officers obey the rule to sound three short blasts before throwing the screws in reverse, which could pull you under the ship and chew you up if you are too close. Also, a shifting wind or tide can move the big ship toward (and over?) your little boat. The monster may be tied to an anchor at one end, but that does not keep it from moving sideways quickly and silently.

Never row between a tug and its tow. And remember that some tugs will have two barges in tow. Always get out of the way of commercial traffic.

A Rule that is very important to remember next time you mosey into False Creek is this section from the Rules of the Road: "A vessel proceeding along the course of a narrow channel shall keep as near to the outer limit of the channel which lies on its starboard side as is safe and practicable." So the first step towards keeping out of trouble east of Kitsilano Point is to ***keep to the right***, whether coming or going. Keep your left hand close to shore.

4.3 Some hazards of open water rowing.

Deadheads are the most common hazard facing a sculler on English Bay. These big logs that have become waterlogged and nearly buried are difficult to see and will not move if hit by blade, rigger, or shell. The shock of a collision--both physical and psychological shock--is tremendous. Fortunately, usually the boat is undamaged and the sculler remains seated and more or less well balanced. The rush of adrenaline passes quickly as the sculler reviews what happened and realizes that all is well. (Even if an open water shell suffers a cracked hull and takes on water, she will get you home, owing to foam or airbags placed in the hull for just this event.) About the worse thing that can happen is for an oarlock to be damaged and inoperative. The solution to this problem is to *always carry a bandana or short length of line*; then, at this moment, pull out the bandana or line and make a small loop with it at the end of the rigger, slipping the oar through the loop and rowing back home.

The most serious hazard facing a sculler on English Bay is being run over by a fast moving power boat or sailboat steered by an inattentive or sun-blinded skipper. In a recent survey of power boat operators, they rated colliding with a small boat when heading into the sun as the most likely cause of a fatality. So *be alert when you are on the sunny side of a fast-moving boat*.

Rowing shells are not visible on radar. Do not rely on radar to announce your presence. Increase your visibility; wear bright clothing. If a

power boat, or any vessel, is heading toward you, watch her course. If she is coming straight on, change your course to one 90 degrees from hers. If the threatening vessel is a sailboat under sail, consider where she will go if she changes tack. *Most sailboat skippers underestimate the speed of a rowing shell*, thinking that we are proceeding at kayak speed.

Do not look up at seabirds directly overhead; bird poop in the eyes can blind. If hit by a bird bomber, *immediately and thoroughly wash the eyes with lavish amounts of water* poured from your water bottle followed by lavish amounts of seawater scooped up from the sea.

Harbour seals and sea lions are not hazards. Don't worry about these pinnipeds, even the bigger and faster sea lions. They may surprise you but they won't jump in and capsize your shell. That's assuming that you *don't feed them*. To do so would create a hazard for pinnipeds as well as for people.

Actually, most novice scullers suffer from a hazard more common than deadheads, and it hits them on shore(!): Skin blisters on the hands are extremely common among new scullers. Gloves can reduce the incidence of blisters, but they can't eliminate the problem. Many hands just have to blister and heal and develop calluses. How to treat skin blisters? The conventional treatment is to puncture the swollen blister with a flame-sterilized needle or pin, squeeze out the water, and cover the wound with a Band-Aid and perhaps some antibiotic cream. Moleskin is effectively used by many scullers. The treatment that some experienced scullers have found to be most effective is to puncture the blister with a pin, etc., and cover the wound not with a Band-Aid but with a thin layer of Crazy Glue or Super Glue. It sounds weird, but under the glue treatment there is less chance of infection and skin repair is faster. It is important to spread the glue over the blister in a *thin* layer. If it's too thick it will come off prematurely; if it's the right thickness it will come off just as the blistered skin is repaired and healthy again. Use a toothpick or the flat side of a jackknife blade to apply the glue. Do not use a finger! Incidentally, the location of the blister(s) and subsequent callus(es) is a measure of how well you are holding the oar; the farther from the fingers (or the deeper into the palm) the less well you are doing. The formation of a callus is not the end of your problems. Since the

callus holds heat and will create second-generation blisters if it is allowed to get too thick, use a smoothing stone to keep calluses down. Use of a smoothing stone, which can be found in the foot section of your local pharmacy, will keep skin buildup to a minimum and help prevent rips of clumps of dead skin. Another solution to the problem is simply to shave the callus with a BIC-type razor in the shower. The razor solution is mentioned here, but it's not for everybody; one must not be too aggressive and press too hard. Be careful.

A final word on water safety and the hazards of sculling: If you ever find yourself in a damaged or disabled boat, or swimming beside your rowing shell and unable to re-enter it for some reason, STAY WITH THE BOAT. Do not leave the boat: do not try to swim to shore. The cold water will sap your energy surprisingly quickly. And a big white boat will be easier to see than your little head bobbing alone in the big ocean. To attract attention--lacking a flare or signaling mirror or smoke bomb--nothing attracts attention like detaching one of the blades from the oarlock and swinging it high over your head. However, before resorting to that de-stabilizing trick of waving an oar, try simply sitting in the shell and, after tying the oar handles together, waving both arms above your head, waving SLOWLY & STEADILY, whenever another boat comes into view.

Dessert: Some Odds & Ends for the Ocean Rower.

5.1 The Rule of Twelfths.

Tides and tidal currents can be either a benefit or a curse: scullers cruising the coast can be assisted by tidal currents or delayed by them, and open water racers always try to take advantage of local knowledge of currents and counter-currents. But we ordinary scullers want to know the state of the diurnal tidal flux of our local water because it helps us to answer the question that arises at the start of every outing: "How far up on the beach should I pull the dolly?" It's embarrassing to find the beach dolly, on return, under water(!), and it's almost as bad to find it *way* too high on the beach. The problem is solved by knowing and applying The Rule of Twelfths. This venerable bit of sailor lore is demonstrated in the following table:

The Rule of Twelfths

Hr. of the Tide (either flood or ebb current)	**Proportion of the Tide's Total Rise or Fall** (during that hour)
1st Hour	1/12
2nd	2/12
3rd	3/12
4th	3/12
5th	2/12
6th	1/12

Our local tide interval, either rising or falling, ranges from 5 to 7 hours, but The Rule of Twelfths (based on a six-hour interval) is still a useful guide.

5.2 Time of Sunrise & Sunset.

January (PST)

Day	Rise	Set
1	0804	1626
5	0804	1630
9	0802	1635
13	0800	1640
17	0758	1646
21	0754	1662
25	0751	1758
29	0746	1704

February (PST)

Day	Rise	Set
1	0742	1709
5	0737	1716
9	0731	1722
13	0724	1729
17	0717	1735
21	0710	1742
25	0703	1748

March (Pacific Standard Time)

Day	Rise	Set
1	0653	1756
5	0645	1802
9	0631	1808
13	0629	1814
17	0620	1820
21	0612	1826
25	0604	1833
29	0555	1839

*Daylight Time begins the first Sunday of April; therefore, times given below for dates early in April in this universal calendar may have to be moved back one hour.

April (Daylight Time)*

Day	Rise	Set
1	**0649**	**1943**
5	**0641**	**1949**
9	**0633**	**1954**
13	**0624**	**2000**
17	**0617**	**2006**
21	**0609**	**2012**
25	**0602**	**2018**
29	**0555**	**2024**

May (Daylight Time)

Day	Rise	Set
1	**0551**	**2027**
5	**0545**	**2033**
9	**0539**	**2038**
13	**0533**	**2044**
17	**0528**	**2049**
21	**0523**	**2054**
25	**0519**	**2059**
29	**0515**	**2103**

June (Daylight Time)

Day	Rise	Set
1	**0513**	**2106**
5	**0511**	**2110**
9	**0510**	**2113**
13	**0508**	**2115**
17	**0509**	**2117**
21	**0509**	**2118**
25	**0510**	**2118**
29	**0512**	**2118**

July (Daylight Time)

Day	Rise	Set
1	**0513**	**2117**
5	**0516**	**2116**
9	**0519**	**2114**
13	**0523**	**2111**
17	**0528**	**2108**
21	**0532**	**2103**
25	**0537**	**2058**
29	**0542**	**2053**

August (Daylight Time)

Day	Rise	Set
1	**0546**	**2049**
5	**0551**	**2043**
9	**0556**	**2036**
13	**0602**	**2029**
17	**0608**	**2022**
21	**0614**	**2015**
25	**0619**	**2007**
29	**0625**	**1959**

Sept. (Daylight Time)

Day	Rise	Set
1	**0529**	**1953**
5	**0635**	**1945**
9	**0640**	**1935**
13	**0646**	**1928**
17	**0662**	**1919**
21	**0657**	**1911**
25	**0703**	**1902**
29	**0709**	**1854**

****Daylight Time ends the last Sunday of October; therefore, times given below for dates late in October in this universal calendar may have to be moved back one hour.**

October (Daylight Time)**

Day	Rise	Set
1	**0712**	**1850**
5	**0717**	**1842**
9	**0723**	**1834**
13	**0729**	**1826**
17	**0735**	**1818**
21	**0741**	**1810**
25	**0748**	**1803**
29	**0754**	**1757**

November (PST)

Day	Rise	Set
1	**0658**	**1652**
5	**0705**	**1645**
9	**0711**	**1640**
13	**0718**	**1634**
17	**0724**	**1630**
21	**0730**	**1625**
25	**0735**	**1622**
29	**0741**	**1619**

December (Pacific Standard Time)

Day	Rise	Set
1	**0744**	**1618**
5	**0748**	**1617**
9	**0752**	**1616**
13	**0756**	**1616**
17	**0759**	**1617**
21	**0801**	**1619**
25	**0804**	**1621**
29	**0804**	**1624**

5.3 Birdwatching.

Some conspicuous species on our rowing patch, month by month, according to *Birds of Vancouver and the Lower Mainland* by R.W. Campbell (2001) are:

January: Buffelhead, Northwestern Crow, Harlequin Duck, Long-tailed Duck, Dunlin, Bald Eagle, Common Goldeneye, Horned Grebe, Western Grebe, Glaucous-winged Gull, Mallard, Marbled Murrelet, Surf Scoter, White-winged Scoter, Black Turnstone, American Wigeon.

February: Buffelhead, Northwestern Crow, Harlequin Duck, Long-tailed Duck, Dunlin, Bald Eagle, Common Goldeneye, Western Grebe, Glaucous-winged Gull, Mallard, Marbled Murrelet, Surf Scoter, White-winged Scoter, Black Turnstone, American Wigeon.

March: Buffelhead, Northwestern Crow, Harlequin Duck, Long-tailed Duck, Dunlin, Bald Eagle, Common Goldeneye, Western Grebe, Pigeon Guillemot, Glaucous-winged Gull, Mallard, Marbled Murrelet, Greater Scaup, Surf Scoter, White-winged Scoter, Black Turnstone, American Wigeon.

April: Bufflehead, Double-crested Cormorant, Pelagic Cormorant, Northwestern Crow, Bald Eagle, Horned Grebe, Pied-billed Grebe, Red-necked Grebe, Western Grebe, Pigeon Guillemot, Bonaparte's Gull, Glaucous-winged Gull, Great Blue Heron, Common Loon, Mallard, Sanderling, Least Sandpiper, Western Sandpiper, Greater Scaup, Surf Scoter, White-winged Scoter, Green-winged Teal, American Wigeon, Greater Yellowlegs.

May: Double-crested Cormorant, Pelagic Cormorant, Northwestern Crow, Bonaparte's Gull, Glaucous-winged Gull, Great Blue Heron, Common Loon, Mallard, Sanderling, Least Sandpiper, Spotted Sandpiper, Western Sandpiper, Common Tern, Greater Yellowlegs.

June: Northwestern Crow, Glaucous-winged Gull, Great Blue Heron, Mallard, Caspian Tern.

July: Rhinocerous Auklet, Northwestern Crow, Glaucous-winged Gull, Ring-billed Gull, Great Blue Heron, Belted Kingfisher, Mallard, Western Sandpiper, Caspian Tern.

August: Rhinocerous Auklet, Northwestern Crow, Bonaparte's Gull, Glaucous-winged Gull, Ring-billed Gull, Great Blue Heron, Belted Kingfisher, Mallard, Sanderling, Least Sandpiper, Spotted Sandpiper, Western Sandpiper, Caspian Tern, Greater Yellowlegs.

September: Rhinocerous Auklet, Double-crested Cormorant, Pelagic Cormorant, Northwestern Crow, Pied-billed Grebe, Red-necked Grebe, Pigeon Guillemot, Bonaparte's Gull, Glaucous-winged Gull, Ring-billed Gull, Great Blue Heron, Belted Kingfisher, Common Loon, Mallard, Sanderling, Spotted Sandpiper, Western Sandpiper, Common Tern, Black Turnstone, Greater Yellowlegs.

October: Northwestern Crow, Harlequin Duck, Dunlin, Horned Grebe, Pied-billed Grebe, Red-necked Grebe, Western Grebe, Bonaparte's Gull, Glaucous-winged Gull, Common Loon, Mallard, Marbled Murrelet, Surf Scoter, White-winged Scoter, Green-winged Teal, Black Turnstone, American Wigeon.

November: Bufflehead, Northwestern Crow, Harlequin Duck, Long-tailed Duck, Dunlin, Bald Eagle, Common Goldeneye, Horned Grebe, Western Grebe, Glaucous-winged Gull, Mallard, Marbled Murrelet, Greater Scaup, Surf Scoter, White-winged Scoter, Green-winged Teal, Black Turnstone, American Wigeon.

December: Bufflehead, Northwestern Crow, Harlequin Duck, Long-tailed Duck, Dunlin, Bald Eagle, Common Goldeneye, Horned Grebe, Red-necked Grebe, Western Grebe, Glaucous-winged Gull, Mallard, Marbled Murrelet, Surf Scoter, White-winged Scoter, Black Turnstone, American Wigeon.

5.4 Sculling Technique Re-visited.

Bill Sayers in *Rowing and Sculling* described it in these words:

"One of the characteristics of the best athletes in any sport is that they seem to make it look easy--they seem to have a natural flowing rhythm that gives them time and enables them to expend their energy in the most efficient way. Nowhere is this more true than in rowing and sculling, where not only must the athlete's movements be as labour-saving as possible but also the smooth run of the boat must not be disturbed.

"A fundamental requirement is that all movements are smooth, economical, and unhurried, and fit together to form a continuous cycle of strokes. Within the cycle the stroke through the water is explosively powerful, but speed can be accomplished without violence. The boat must accelerate through each stroke from catch to finish, and it is important for you to strive for this feeling of a powerful (yet smooth) surge through the water and incorporate it in the mental image of the stroke. The terminal speed of the handle is maintained by the hands as they draw it to the finish and guide it round and away from the body. The aim is for a constant speed of the hands in a semi-circular path as the blade is released from the water and begins the recovery.

"The age-old coaching cry of 'hands, body, slide' is still valid, partly for the practical reason that the hands must be clear of the knees before the knees rise, and partly because that sequence really is the best way to finish the stroke and start the recovery. Holding the legs down and the back firm gives the most stable basis for the action of the hands and arms as they complete the stroke and move the handle round the turn. Allowing the shoulders to move too soon prevents the muscles in that area from maintaining their force on the handle and a weak finish will result. And if the shoulders initiate the recovery rather than the arms, then the action will be slowed and the blade is likely to drag in the water at the finish. Although the arms should be well extended before the body starts to move,

they should not be stiff--indeed it is very important that all parts of the body should be as relaxed as possible during the recovery. It is desirable that most of the body-swing is achieved before the seat moves away for three reasons: Firstly, it helps to transfer pressure on to the feet and thus stabilize the boat, secondly it avoids later changes in height of the shoulders which are the common cause of poor bladework in the approach to the catch, and thirdly the delayed sliding helps to minimize the effect of the changing centre of gravity of the boat on the boat's speed.

"All that is left now is to slide forward at steady speed and use the hands and arms to prepare for the catch. As already stated, any stiffness or rigidity is to be avoided but it is generally helpful to keep the head up as an aid to maintaining a good upright posture. A flatter back will be stronger when the catch is taken, and sitting tall helps to maintain the arms and shoulders in the best position for the catch. As the athlete compresses and reaches out for the catch, muscles and tendons are stretched, and we have seen that this effect can give extra power and efficiency. In the past, some crews and scullers using a long slide technique have deliberately compressed very fast, but this can create problems with timing and balance and tends to bury the stern of the boat. Modern thinking suggests that a controlled but unchecked approach gives the best result.

"To sum up, the blade is driven quickly through the water, accelerating from catch to finish, and the hands maintain this final speed round the turn and away before the seat moves steadily down the slide. The recovery is therefore slower than the drive through the water, and a good sculler will be able to retain this controlled and relaxed recovery even at a very high speed.

"The objective of the rowing stroke is to accelerate the boat to maximum speed, and then slow it down as little as possible between strokes. It is easy to forget, however, that the movement of the blade, and the forces applied to it, are not the only factors affecting boat speed. The crew or even a single sculler is much more massive than the boat itself, and consequently the movements of the crew or single sculler up and down the boat have a large effect on the speed of the boat."

Richard Eldridge Copley
May, 2004

NOTES & QUESTIONS: