

THE SPORT OF ROWING

To the readers of *www.Rowperfect.co.uk*

This is the third installment on *www.Rowperfect.co.uk* of the latest draft of the beginning of my coming new book. Many thanks again to Rebecca Caroe for making this possible.

Details about me and my book project are available at *www.rowingevolution.com*. For six years I have been researching and writing a four volume comprehensive history of the sport of rowing with particular emphasis on the evolution of technique. In these last months before publication, I am inviting all of you visitors to the British Rowperfect website to review the near-final draft. Your comments, suggestions, corrections, agreements, disagreements, additional sources and illustrations, etc. will be an essential contribution to what has always been intended to be a joint project of the rowing community.

All my contact info is at my website. I will also be at the World Championships next month on Lake Karapiro, and I hope to

be at the FISA Coaches' Conference in London in January. Or you can email me anytime at *pmallory@rowingevolution.com*.

For a short time you can still access the first and second installments. Additional chapters for your review will continue to appear at regular intervals on *www.Rowperfect.co.uk*. As you would expect, the first part of the book deals with rowing in England where the sport began, and that has presented a special challenge for me, a colonial writing at a distance of 8,000 miles from the Mother Country. That is why your various perspectives will make such a difference, so let me thank you all again for your contributions to this book project.

There is one thing I have been looking for that I have not located. Does a **portrait of Arthur Shadwell** exist? If so, could someone tell me from whom I might obtain a high-resolution scan? Many thanks.

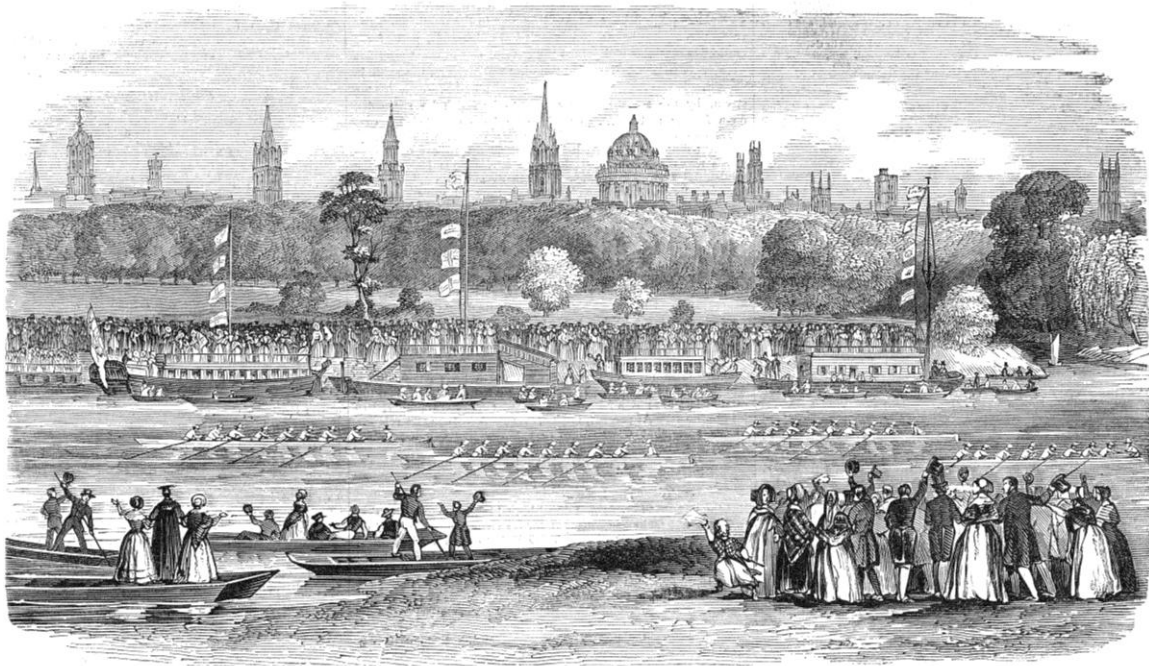
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Part II
The Birth of
English Orthodoxy

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6. Revolutionary Boundary

The London Style – T.S. Egan – A.T.W. Shadwell



THE BOAT RACE.

The Illustrated London News, June 22, 1844

Competitive sport rowing was already well established in London by the 1820s.

Evolutionary Divergence

In response to the demands of competition and to the accelerating cascade of innovations in equipment, sport rowing technique was under extreme evolutionary pressure by the 1820s. However, given the challenge of travelling any distance in 19th Century Britain, the rural rowers of Eton, Oxford and Cambridge were largely cut off from the “**Metropolitan rowing**” environment of London. Soon all these

various areas began to evolve as discreet populations, but the starting point in all cases was the working-class waterman’s stroke.

Richard Burnell: “The oarsman of the early 19th Century had perforce to turn to the professional waterman for instruction and example. But the professional of those days was not the professional coach of later years. He did not earn his living by coaching and racing. He was first and foremost one who plied his wherry for hire. And his style, in

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so far as he had one, was designed to propel his heavy boat with reasonable economy of effort, and with reasonable dispatch.

“If he was asked to race for a wager, that was but a by-product of his trade, and if he was asked to teach a young gentleman, he naturally taught him to row or scull as he rowed or sculled himself.

“Since his style was designed to pull a heavy boatload of people, it was not ideally suited for propelling a lighter boat at racing speed. It is a safe assumption that he favoured a short, choppy stroke, with something of a hoick at the finish; the same style, in fact, that we can see in a ferryman today, or in a seaside boatman.”²⁸⁸

The First Ever Description of Rowing Technique

History’s earliest surviving written description of how to row properly was contained in **Donald Walker**’s aptly titled 1834 compendium, *Manly Exercises: In Which Rowing and Sailing are now first described; and Riding and Driving are for the first time given in a work of this kind; As well as the subjects of Walking, Running, Leaping, Vaulting, Pole-Leaping, Balancing, Skating, Carrying, Disk-Throwing, Climbing, Swimming, &c. &c. Together With the Preliminaries of Training, Position, Extension Motions, Indian Club Exercise, &c.*²⁸⁹

Apparently, Walker considered the inclusion of the new sport of rowing to be significant for his book. It was the first sport he listed in the title, a picture of a sculler was embossed onto the leather front cover, and an engraving of two scullers

participating in a “river wager”²⁹⁰ was placed on the title page.

But Walker was not a rower himself. He was a London-based professional writer who was in the midst of producing a comprehensive survey of physical education in several volumes. In addition to his book on manly exercises, he also wrote books on exercises for ladies, on indoor and outdoor games and sports, on defensive exercises, along with additional volumes on reading and writing, spelling and pronunciation.

Of the thousands of pages he produced in his career, exactly seven were about rowing. Since he specifically referred to “watermen,” it is apparent that he had consulted with them while writing his short chapter on sculling, but the technique he described was not the old artisan waterman’s stroke. It was a new technique recently developed at the gentleman amateur rowing clubs on the Tideway, probably by the amateurs themselves in conjunction with their professional waterman coaches.

According to rowing historian **Rudie Lehmann** writing more than seventy years after the fact, the move away from the original waterman’s stroke had indeed begun in London, perhaps as early as 1820. However, all that Lehmann had to rely on in his own day were inferences gleaned from old issues of *Bell’s Life*, the world’s first sporting newspaper, a London weekly founded in 1822.

Lehmann: “The task [of reconstructing the early evolutionary history of rowing technique] is not an easy one, for the heroes themselves have long since rowed their last course, and the records they left of their ideas on this subject are few and scattered.

“Indeed, the references to style are mainly incidental.”²⁹¹

One explanation for this dearth of documentation was that for an English

²⁸⁸ Burnell, *Swing*, p. 23

²⁸⁹ published in many editions in London and in Philadelphia, where the word “British” was added to the beginning of the title.

²⁹⁰ See Chapter 2.

²⁹¹ Lehmann, p. 24

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gentleman, trying overly hard to succeed at a sport or activity was unseemly, “not cricket,” as it were, so to actually give thought to, write down and distribute a detailed analysis of effective rowing technique was ethically awkward at best and potentially risked the loss of one’s amateur status.²⁹² As far as we know, it was done only three times before 1850, and all three times the gentleman authors chose to write anonymously.

Here is Walker’s description of the sculling pullthrough: “At the beginning of the pull, he must, in general, bend his body till his head is over his knees, and extend his arms as far aft as convenient, that the blades of the sculls may be thrown correspondingly forward [Figure 1 on this page].

“With regard to the back in particular, some think that, if a short distance is to be rowed, it should be bent; and that if a long distance, it is less fatiguing to keep it straight.

“When the arms are extended as far aft and the blades of the sculls as far forward as convenient – which must never be so far as to jam in the rullocks – the rower must dip the sculls into the water and pull towards him by at once bending the arms and the body.

“When in the middle of the pull [Figure 2], one of the hands will go higher than the other [in order for the handles to pass one over the other].

“The end of the pull [Figure 3] must not take place till the elbows have approached the tops of the hips, the hands are brought



Beginning of the Pull.



Middle of the Pull.



End of the Pull.



Return of the Sculls.

Walker, *Manly Exercises*

Illustrating the first ever published description of how to row.

Body swing from +40° forward to -50° layback.

towards the chest, and the body is thrown well back.

“There would be a loss of power, however, if the hands were brought too near the chest; and the body should not be thrown further back than it may easily and quickly recover its first position for the next stroke.”²⁹³

This description translates to a body swing from +40° before vertical to -50° of

²⁹² See Chapter 5.

²⁹³ Walker, pp. 129-30

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layback past vertical at a time decades before the invention of sliding seats. A modern athlete can without feeling uncomfortable follow Walker's instructions with the possible exception of his caution not to bring the hands "towards the chest."

With the benefit of hindsight, we will discover in the coming pages that Walker's description of the new technique did not explain the technique that emerged from this period accurately in every detail, especially the hands-to-chest thing, but he definitely captured the fact that a change from the once universal short, choppy waterman's stroke was in the air.

The 1836 Boat Race

The developing dissimilarity in technique between amateurs on the Tideway and all that had come before was first clearly noticeable in 1836 on the occasion of the second-ever **Boat Race** between Oxford and Cambridge. Their first meeting had happened in 1829 at **Henley**,²⁹⁴ a rural village in the countryside not far from Reading. Seven years later, the rematch would take place between Westminster and Putney Bridges in London,²⁹⁵ and so interested observers used to seeing Metropolitan rowers could get their first good look at the two teams from the countryside.

Bell's Life: "We cannot say much in praise of the rowing of either party. Their style is bad for the Thames, whatever it may be for Cambridge and Oxford waters. . . ."

"We saw the Cambridge (the winners) when they first went out after their arrival in London, and remarked upon their style of

rowing as being nothing like that of the crack men of the Thames. They invariably *begin to row where the London men leave off*, and appear to have no notion of bending forward. [my emphasis]"²⁹⁶

By this cryptic comment, the *Bell's Life* correspondent sarcastically meant that while London amateur rowers ended their pullthroughs with their backs not far past vertical, the Cambridge crew began their strokes with their backs not far ahead of vertical ("where the London men leave off"). Even London watermen were offended.

Boat Race historians **G.G.T. Treherne** and **J.H.D. Goldie**: "Their rowing was a good deal criticized by the watermen and amateurs of the Tideway. They seem to have had but little professional coaching until reaching London, beyond such as could be obtained from their own local watermen. Amateur talent had not developed itself sufficiently to be effective in a coaching capacity."²⁹⁷

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Lehmann, writing in 1908: "It is plain from [*Bell's Life*] that the standard style amongst Londoners was one in which the men swung their bodies [forward], and thus by the use of their weight [their back swing] secured a hard beginning to their stroke. *In these essentials, their style was the orthodox style of later years, and even of the present day.* [my emphasis]"²⁹⁸

Burnell, writing in 1952: The new **London Style** "taught a very much longer [back] swing at both ends of the stroke than the watermen, with a lightning quick beginning, and a long, firm finish. This was the style that held sway until the advent of the sliding seat in 1872-3. *It was also the*

²⁹⁴ See Chapter 5.

²⁹⁵ 5.4 miles or 8.74k. This was the race before which Edmond S. Stanley allegedly suggested that Cambridge wear light blue ribbons and R.N. Phillips went out and bought some. See Chapter 4.

²⁹⁶ Qtd. by Lehmann, p. 26

²⁹⁷ Treherne & Goldie, pp. 135-6

²⁹⁸ Lehman, p. 26

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forebear of our present-day 'Orthodoxy.' [my emphasis]²⁹⁹

All historians who have studied this era have recognized that rowing was on the brink of a revolutionary boundary. This was the wellspring of what has become known as **English Orthodox Technique**. Within a decade or so, the previous Age of Watermen would be just a memory. In 1836, however, any amateurs outside of the London clubs had not yet gotten the message.

Lehmann: "The University men, on the other hand, had no swing [forward] and therefore no real beginning. All they apparently did was to lug with their arms towards the finish of the stroke."³⁰⁰

"In the only two races which had hitherto been rowed between the crack men of the Thames [in London] and University men (Leander matches against Christ Church³⁰¹ in 1828 and against Oxford in 1832), the former had triumphed."³⁰²

Modern Counterparts

Today it is possible to see something similar to English Orthodox Technique in this, its nascent 1830s form by observing contemporary lifeguard boat racing in the United States and in Australia (following page). The similarities to and differences from the illustrations from Walker's *Manly Exercises* are fascinating.

In both, the pullthrough is dominated by back swing. To keep their heavy, dory-like boats moving, lifeguards use their backs to lengthen the stroke as much as is practical, just the way their London predecessors must also have done. However, as films clearly show, lifeguards use only moderate reach and maximal layback while, according to all

accounts, including *Bell's Life* and the Walker illustrations, London amateur rowers of the '20s and '30s balanced their reach and finish angles.

The explanation for this is that in the early 19th Century swivel oarlocks had not yet been invented. With thole pins, oar shafts would bind up ("jam in the rullocks." See above.) if the rower went too far in either direction away from perpendicular to the gunwales, and so they quickly learned not to do so.

The Ferryman's Finish

In addition, contemporary lifeguard rowers employ a "**ferryman's finish**," using the arms to literally pull the upper body back up towards vertical at the end of the pullthrough.

This colorful and descriptive term was in common use during the youth of the peerless coach **Steve Fairbairn** (1862-1938)³⁰³ more than a century ago,³⁰⁴ although it is unfamiliar to most rowers and coaches today.

The concept of ferryman's finish has rarely been addressed as a viable technique during the current era even though it can be seen, usually subtly and/or unconsciously used, by many contemporary crews, including some of the most successful.

But with ratings often as high as 50 strokes per minute, the ferryman's finish had been an essential, even inevitable, part of the traditional waterman's stroke, and it remains a requirement for today's lifeguards, some of whom lay back as far as -60°.

Later in this chapter, we will discover that while it was being used by University rowers of 1836 (see above), the ferryman's finish was *not* a part of the earliest London manifestation of the nascent English Orthodox Technique, and this was indicated

²⁹⁹ Burnell, *Swing Together*, p. 23

³⁰⁰ ferryman's finish. See below.

³⁰¹ one of the colleges which make up the University of Oxford.

³⁰² Lehmann, p. 26

³⁰³ See Chapter 14 ff.

³⁰⁴ *Fairbairn On Rowing*, p. 36

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Comcast SportsNet

2005 Sea Isle City, New Jersey Lifeguard Double

Bow **John Temme**, Stroke **Dave Stearne**

Lifeguard rowing is the modern-day near-equivalent of pre-19th Century English professional waterman's rowing.

Technique features moderate reach forward, strong back swing to -45° layback, followed by a ferryman's finish with arms straining from entry to release.

by Walker's text and illustrations. Very early on, many gentlemen decided that the ferryman's finish was crude, inelegant and counterproductive.

Selection and Migration

Cambridge won the 1836 Boat Race over Oxford by nearly a minute, but their coxswain and coach, **Tom Egan**, could not have been happy with the scathing reviews that both Universities got from *Bell's Life*

and other observers from the Metropolitan rowing community.

Population genetics predicts that when two competing ideas collide with one another, the more successful of the two will tend to drive the other to extinction. This process is called **selection**.³⁰⁵

In the year after 1836, Cambridge adopted the technique they had seen in London. The London Style, the nascent

³⁰⁵ See the Introduction.

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long-swing English Orthodox Technique, **migrated** to Cambridge.

The next year the Light Blues were anxious to test their new approach against an outside opponent. When they found they could not arrange a race with Oxford, they turned around and challenged London's Leander Club to a race on the Tideway.

Treherne & Goldie: "The Cantabs astonished the sporting world by boldly throwing down the gauntlet to the Leander.

"In those days the **Leander Club**, whose scarlet ribbon had earned them the sobriquet of the '**Brilliant**s,' were the leaders of amateur style on the Thames.

"The London talent, amateur and professional alike, thought that the vaulting ambition of the Cam had overleaped itself. The Leander men were not in their *première jeunesse*. They were on the average well on the shady side of thirty summers; but their prestige made them favourites in the betting.

"Westminster to Putney was the course. Watermen steered each crew, and the odds were upset by Cambridge, who showed that rowing was becoming a science at the Universities by winning by seven seconds."³⁰⁶

Lehmann: "Cambridge seem to have taken the criticism of the experts to heart and mended their style."³⁰⁷

Professional Coxswains

The 1837 race was notable in that both sides employed professional watermen as their coxswain. In prior years, both Universities had employed waterman coaches and steerers, but in the Boat Race itself, by this time held only twice, Oxford and Cambridge had eschewed waterman coxswains. At least since 1836, Cambridge had been coached by a student member of its crew, their coxswain **T.S. Egan**.

But Leander insisted.

W.F. Macmichael, *The Oxford and Cambridge Boat Races*: "It was agreed at the wish of Leander that the coxswains should be watermen. At this period, it was the custom on the London water to allow 'fouling,' that is, to let one boat impede the other whenever it chose and was able to do so. This, of course, made the office of coxswain one of far greater importance than it is now; and at this time there were two London watermen, Parish and Noulton, who were celebrated rivals in this part of a coxswain's work.

"As, however, the object of the Cambridge men in challenging was to discover which crew was best, they made it an express stipulation that no fouling was to be lawful."³⁰⁸

Lehmann: "For many years, professional coxswains continued to exercise a large amount of authority over the rowing of amateurs, not on the Isis or the Cam, but on Metropolitan and other waters."³⁰⁹

James Parish, the Leander coxswain for the 1837 race, had a seventeen-year relationship with that club.³¹⁰ Cambridge employed well-known London waterman **William Noulton**, winner of the Doggett's Coat and Badge in 1822, to replace Egan for the Leander race. Among the many races in which Noulton had participated during his career, he had steered Leander against Oxford in 1831 and Westminster against Eton in 1836.

1838 Rematch

Leander was horrified to have lost to a University crew in 1837 and demanded a rematch with Cambridge.

³⁰⁶ Treherne & Goldie, p. 136

³⁰⁷ Lehmann, pp. 13, 26

³⁰⁸ Qtd. by Lehmann, p. 13

³⁰⁹ Lehmann, p. 12

³¹⁰ Lehmann, p. 10

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Vanity Fair, April 3, 1912

William Baliol Brett
Cambridge 5-seat
as a judge in later life.

From 1869 through 1914, every weekly issue of *Vanity Fair* Magazine contained the now classic caricature of a famous personage.

Carlo Pellegrini, using the pen-name “Ape,” contributed 323 before his death in 1889.

Lehmann: “In the following year, a return match was rowed between the two clubs on the same terms as before, and with the same coxswains. It resulted, however, in a series of fouls, and though Leander came

in first, the umpire decided it was ‘no match’³¹¹.”³¹²

The Times of London, reflecting the Metropolitan sensibility, thought it was all a grand show: “The boats were going with almost the velocity of lightning. The science of fouling was developed in all its senses, and the maneuvering between the coxswains splendid. Throughout the distance, the stamina of each party were wonderful. The Leander won, amidst an absolute roar of cannon, by about a length, but both parties had done all they knew.

“In the course of the evening, and shortly after they had dressed, the Cambridge gentlemen expressed their opinion that had they been allowed a fair opportunity of passing, they might or must have won. The umpire was called upon, in consequence of the diversity of opinion that prevailed, and he decided that the argument was a wager without fouling, and that the frequency in this of the violation of the agreement left him to decide that it was a drawn wager (no winner).

“Last night the general opinion was Leander had won.”³¹³

The Cambridge 5-seat, **William Baliol Brett** (1815-1899), Lord Esher, the future Master of the Rolls of the Chancery of England, the second most senior judgeship of England and Wales, wrote the following description of the race in a formal letter to Leander after they had disputed the umpire’s decision to void the competition:

“Upon starting for the match we were at first, as in the former year, left behind; but on coming up to you at the Horseferry we most unexpectedly found ourselves against a barge on one side and your boat on the

³¹¹ The umpire’s decision was important not just to the participants but to all who had placed bets on the outcome.

³¹² Lehmann, p. 13

³¹³ Grand Eight-Oared Cutter Match Between the Cambridge University and the Leander Club, *The Times*, June 14, 1838

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other, fully proving that Parish had closed upon us, and not left us room to proceed on our proper course.

“Noulton, upon this, was anxious to proceed also to waterman’s practice, and so endeavour to break the rudder of your boat. We, however, thinking that there might have been some accident in the case, insisted upon backing water and yielding the Middlesex side of the river to you. This we did, gave you a considerable start, pulled up to you on the Surrey side, and were again crossed. We still insisted upon Noulton yielding to you; but at the Red House, finding all hope of being allowed to pass useless, and convinced that you were sanctioning your steerer’s conduct, we told him to run into you, and there broke your oar, etc.

“We now asked the Umpire whether the race was fair or foul, and upon his answering that it was foul we put up our oars to claim the match.

“Our own boat was, at this time, half full of water; but seeing that you had procured a new oar, and had rowed away about 200 yards, we again started after you, and pulled up to you in less than half a mile. After Chelsea Bridge we again left you, and actually crossed and recrossed the river, to try whether or not you would allow us to pass. Being again crossed within ten yards of Wandsworth Meadows, the wrong side of the river, we gave you a last start, and ran into you as you passed through Putney Bridge.

“Knowing all these circumstances in our own boat, and having felt the tremendous labour of starting a heavy eight-oared boat some seven or eight times in one day, which your crew had not to do, we cannot but feel greatly astonished at your claim to ‘have won the match,’ or at your affecting to doubt which is the superior crew.”³¹⁴

³¹⁴ en.wikibooks.org/wiki/The_Rowers_of_Vanity_Fair/Brett_WB

Lehmann: “I have no doubt that this unfortunate result must have strengthened the University men in their determination to keep clear of professionals.”³¹⁵

At the end of two years of competition with Leander, Cambridge’s regular coxswain and coach, T.S. Egan, seems to have gained a strong understanding of and skill in teaching the new rowing technique, and perhaps a respect for the knowledge and skills of professional waterman, but a *significant* disdain for them as race coxswains or coaches. Egan’s opinions on these two matters would guide the next two decades of Boat Race history and set a tone that would last for a century and more.

1839 Boat Race

When the third Boat Race between Oxford and Cambridge was finally arranged in 1839, both boats were carefully scrutinized by the press.

Treherne & Goldie: “[The Cambridge] style had been much improved by their Leander matches during the past two years [1837 and 1838], and by the coaching which they had meantime received from Noulton [!] and other London watermen.”³¹⁶

Bell’s Life also reported the substantial change: “The Cambridge men pulled like a piece of mechanism, so beautifully did they work together. Their stroke was really terrific; one of the severest we ever saw. It was as long as the men could stretch forward, and at the same time tremendously swift.

“[The Oxonians’] style is not to our liking.”³¹⁷

Lehmann: “Jones, a London waterman, had coached Oxford for this race. Cambridge had been looked after by **T.S. Egan**, their coxswain. I gather from *Bell’s*

³¹⁵ Lehmann, p. 13

³¹⁶ Treherne & Goldie, p. 137

³¹⁷ Qtd. by Lehmann, p. 26

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comment that Cambridge had by this time not only mastered the London style, but had improved upon it.”³¹⁸

Treherne: “Oxford were by no means well together, and rowed too much in a sea-going style, jerky, with arm-work as if they were snatching at the waves of the sea [i.e. the waterman’s stroke with ferryman’s finish]; while Cambridge used their bodies and swung fore and aft more in the river style of rowing [the nascent English Orthodox Technique].

“The race was as hollow as it well could be: from start to finish Oxford were never in it, and Cambridge won the ‘rubber’ match that had been rowed up to this date in a common canter by upwards of a minute and a half.”³¹⁹

Rowe & Pitman: “It was the general impression that the science and style of Cambridge were so much superior to those of Oxford that the latter could never hope to win again.”³²⁰

Thomas Selby Egan

Several rowing histories, including **Rowe & Pitman**,³²¹ gave the credit for the improvement in Cambridge technique to



J.E. Collins

Thomas Selby Egan

The folly on Temple Island at Henley is shown in the background.

E.S. Stanley of Jesus College,³²² Egan’s stroke-oar on the 1839 crew.

Treherne & Goldie: “The stroke of Stanley remained a household word for style and effect for many a later year.”³²³

³¹⁸ Lehmann, pp. 26-7

³¹⁹ Treherne & Goldie, p. 137

³²⁰ Rowe & Pitman, p. 111

³²¹ Rowe & Pitman, p. 15

³²² another of the constituent colleges of Cambridge. They row with pea green blades.

³²³ Treherne & Goldie, p. 137

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Stanley was by all accounts a superb oar, Captain of the Boats at Eton in 1835, but in his day, Eton was still rowing the traditional waterman's stroke, and he had joined the Cambridge eight only in 1838.

Just one man made the full journey from the 1836 Cambridge Crew which had rowed the traditional stroke through 1837 and 1838 against Leander to the 1839 Boat Race Crew which had fully converted to the new English Orthodox Technique. That one man was **Thomas Selby Egan** (1814-1893), the man in charge.

British rowing historians **Peter Haig-Thomas & Archie Nicholson**:³²⁴ "In 1836 T.S. Egan coached for the long swing and a sharp catch of the water with the blade at the beginning, and may thus be claimed as the originator of the 'amateur' style."³²⁵

Tom Egan was of Irish stock and came to rowing in 1833 upon his arrival at **Gonville & Caius**³²⁶ **College**, Cambridge at the age of 18. At 9 st. (126 lb. 57 kg), he was a natural coxswain. He eventually received his Bachelor of Arts in 1838 and a Master of Arts in 1842.

Drinkwater: "The first great amateur coach, he was to instil into the Cambridge crews in the years which followed the true science of rowing."³²⁷

1840

In 1840, with Egan still at the tiller, Cambridge again won the Boat Race, but given that their radical new technique was plain for all to see, Oxford had observed, copied and begun to catch up.

Rowe & Pitman: "Their attempt to emulate the superior style which Cambridge

had shown in the preceding year enabled them to make a much closer race of it."³²⁸

Indeed, Oxford led for the first half of the 5¾ mile course from Westminster to Putney.

Treherne & Goldie: "Had they been as carefully trained as the Cantabs, they might have retained that lead, but they collapsed off the old Red House, Battersea, and were gradually overhauled. Cambridge had been rowing a game stern chase, and at last went by, but the race was well fought to Putney Bridge, and Cambridge were not clear [They were ahead by less than a length.] when the boats shot that tumbledown structure."³²⁹

After 1840

Egan remained heavily involved with Cambridge rowing through 1849. In 1841, no longer eligible to be a participant in the Boat Race, he coached the winning C.U.B.C. Blue Boat, and then he coxed the victorious entry in the **Grand Challenge Cup** at the Henley Royal Regatta. The latter crew was the **Cambridge Subscription Rooms**, an alumni boat based in London.

The following year, Egan again prepared Cambridge for the Boat Race and coxed the Blue Boat three weeks later during the heats of the Grand. He then moved back to his defending-champion Cambridge Subscription Rooms boat for the Grand Challenge Cup final, which they won narrowly over the Light Blue Boat Race crew.³³⁰

Alfred H. Shadwell

Both years' Subscription Rooms boats had multiple members of Egan's Boat Race champion crews of 1836, 1839 and 1840, but as we trace the migration of English

³²⁴ See Chapter 15.

³²⁵ Haig-Thomas & Nicholson, p. 30

³²⁶ pronounced "keys." They row with black blades with a narrow band of Cambridge blue near the tip.

³²⁷ Drinkwater, p. 16

³²⁸ Rowe & Pitman, p. 111

³²⁹ Treherne & Goldie, p. 138

³³⁰ Burnell, *Oxford and Cambridge*, p. 197

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Orthodox Technique, one name stands out, **Alfred Hudson Shadwell**, the oldest of four brothers who had learned their rowing at Eton between 1833 and 1840.

Their father, Sir Lancelot Shadwell, was a barrister and MP. He became Vice-Chancellor of England in 1827.

Alfred was the best athlete of his family while at Eton, winner of the School Sculling and a member of the Eight and the *Monarch* ten-oar in 1835, only his third year of rowing. His crew boats also contained his future Cambridge stroke, E.S. Stanley.

In 1836, Alfred's final year at Eton, he came first in School Pulling, rowed 3 in the Eight's win over Westminster and again rowed in the *Monarch* in the Procession of Boats.

Like all his brothers, Alfred Shadwell was a bit on the small side for rowers of his era, weighing only 10 st. 7 lb. (147 lb. 67 kg) when he got to Cambridge and joined **Lady Margaret Boat Club** of St. John's College.³³¹

He rowed bow in the winning Light Blue Boats of 1839 and 1840, with Egan as his coxswain and coach. After taking leave of University, he carried on in rowing for Egan's Cambridge Subscription Rooms crews in 1841, '42 and '43.

But perhaps Alfred Shadwell's greatest contribution to rowing history was to introduce his younger brother, Arthur, to his coach, Tom Egan.

Arthur T.W. Shadwell

The second of the Shadwell brothers³³² at Eton was **Arthur Thomas Whitmore Shadwell** (1820-1893). Arthur coxed the

Eton Eight in 1837, and despite weighing under 10 stone (140 lb. 64 kg), he placed first in School Pulling that year.

From Eton, he followed his father and older brother to St. John's College, Cambridge. He rowed 3 in the Lady Margaret Lents boat of 1839 with his brother, Alfred, at stroke. He soon "came across Tom Egan of Caius,"³³³ his brother's Blue Boat coach. Arthur and Tom would be linked as friends, competitors and collaborators for the next two decades.

During his years at Cambridge, Arthur Shadwell became a protégé of Egan's, absorbing the innovative new English Orthodox Technique that the latter was perfecting. As coxswains, the two must have had a lot in common, including, it would turn out, a disdain for the coaching and steering of professional watermen.

Arthur also continued to pursue his rowing. Despite his small size, he won the **Colquhoun Challenge Sculls**, the premier singles event at Cambridge, in both 1840 and 1841.

In 1840, Shadwell joined his 1837 Eton Champion School Pulling partner, **I.J.J. Pocock**, who had just rowed 2 in the 1840 Oxford Dark Blue Boat, the one which had given Cambridge such a good race. Together, Pocock and Shadwell rowed the bow pair in the **Oxford Etonian Club** eight that raced and lost to Eton on July 4 of that year.

Late in his life, while decrying the tendency to make boats lighter and lighter, Arthur Shadwell seemed to be describing himself during his Cambridge days when he wrote: "Then also it would be unnecessary to put on the after-thwart a young gentleman not strong enough to have rowed with a full-sized oar; but each crew might, without disadvantage, have a matured oarsman thoroughly understanding his business for coxswain – one who has brains as well as

³³¹ They row with scarlet blades.

³³² The third and fourth brothers finished their studies at Eton in 1839 and 1840, both rowing in the *Monarch* in the Procession of Boats, but otherwise not excelling.

³³³ Dodd, *Oxford & Cambridge*, p. 91

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body, strong enough to have rowed bow or two in a racing eight, and skilful enough to win the Silver Oars³³⁴ or the University Challenge Sculls; one, in short, who is a *waterman*, with practice, judgment and presence of mind, acquired by habituation to such contests. In such qualities, of a certainty, would be found more than a counterpoise against his possible two extra stones.³³⁵

Migration to Oxford

Meanwhile, the seeds were being sown at Oxford for a revolution in rowing to equal that which had so recently occurred at Cambridge.

Fletcher N. Menzies had been at Oxford since 1838 and had won the University Pairs competition with his brother, **Robert Menzies**, in 1839.³³⁶ In 1841, he stroked his **University College**³³⁷ eight to Head of the River, but twice he refused to join the Oxford Boat Race crew, in retrospect probably because they were still being coached by professional watermen.

Drinkwater: “At the same time [October, 1841³³⁸], A.T.W. Shadwell, brother of the Cambridge bow, had migrated from Lady Margaret to Balliol.³³⁹ He was fully conversant with the teachings of Egan at Cambridge and had won the Colquhoun Sculls twice. He was, moreover, light

enough to cox a boat, weighing but 10 st. 4 lb. [144 lb. 65 kg] Menzies seems to have enlisted his aid at once, and, in opposition to authority, to have got together a crew of his own in the Michaelmas term.”³⁴⁰

Rowe & Pitman: “Several of the rowing men, and principally Mr. Fletcher Menzies of University College, realized that the style which was taught by their professional coaches was radically wrong. Menzies advocated the style [which has come to be called English Orthodox Technique], and which has since been accepted as the only true one. He also recommended the abolition of professional, and the institution of amateur, coaches.

“He received the warm support of Mr. Shadwell, who had migrated from Cambridge. Shadwell and Menzies met with some opposition; but in the autumn of 1841 the latter was elected President of the O.U.B.C. and at once effected a radical change.”³⁴¹

Drinkwater: “Between them, Menzies and Shadwell perfected a system of amateur coaching and, dispensing with watermen’s advice, laid the foundation of the true style at Oxford. For the short digging ‘waterman’s stroke,’ as it used to be called, they substituted the long dragging stroke with the sharp catch at the beginning.”³⁴²

1842 Boat Race

In 1842, Menzies stroked the Oxford Dark Blue Boat while Shadwell coached and coxed. The race was nearly even during the first mile until Oxford began to pull away.

Drinkwater: “In Chelsea Reach,³⁴³ [7-seat G.E. Hughes], who had lost his straw hat, began to look visibly faint and much

³³⁴ Magdalene Silver Oars, the Cambridge pairs championship.

³³⁵ Treherne & Goldie, pp. 258-9

³³⁶ Dodd, *Oxford & Cambridge*, p. 90

³³⁷ They row with navy blue blades with a yellow Greek cross.

³³⁸ Joseph Foster, *Alumni Oxonienses: the Members of the University of Oxford, 1715-1886*, James Parker & Co., Oxford, 1891, p. 1278

³³⁹ Balliol College, Oxford. They row with sky-blue blades with a small red triangle based at the neck.

³⁴⁰ Drinkwater, p. 22

³⁴¹ Rowe & Pitman, p. 111

³⁴² Drinkwater, p. 22

³⁴³ the third mile

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distressed, when the coxswain [Shadwell] reminded him that a slice of lemon was placed in each man's thwart within his reach. This revived him, and at the same moment the captain [Menzies] took off his own straw hat and gave it to him.

"A second danger threatened Oxford, owing to the dense cramming of [spectator] boats a little below Putney Bridge. [Shadwell], in order to make sure of the arch, stood up, and by his shouting cleared the course.

"By this accident he learned that it was possible to stand up and survey calmly all going on within and without the boat. Thenceforth it became the general practice for the coach when steering to stand up and address his men, steadying himself by the tightened rudder lines."³⁴⁴

Oxford passed under the Putney Bridge finish line thirteen seconds ahead of Cambridge to win for the first time since the inaugural Boat Race of 1829.

Coach or Rower

It seems that historians of early rowing history tended to give credit for any technical innovations to the rower who executed them rather than the coach who taught them.

Etonian, Boat Race winner, historian **Gilbert C. Bourne**: "Fletcher Menzies introduced the long stroke with the catch beginning in 1841."³⁴⁵

Rudie Lehmann also gave the credit to Menzies: "[He became] the advocate of the long, as opposed to the short, stroke at Oxford."³⁴⁶

Rowe & Pitman: "Mr. Fletcher Menzies of University College realized that the style which was taught by their

professional coaches was radically wrong."^{347 348}

G.C. Drinkwater and **Richard Burnell** attribute the migration of English Orthodox Technique from Cambridge to Oxford to Shadwell more than Menzies,³⁴⁹ which rings true to me.

The Oxford Seven

Fletcher Menzies is perhaps best known to history for the race he *didn't* row. The occasion was the final of the 1843 Grand Challenge Cup at Henley. Oxford's opponent in the final was the Cambridge Subscription Rooms crew, two-time defending champions, with Alfred Shadwell in 2 and T.S. Egan coxing. Arthur Shadwell was coxing Oxford.

Menzies had been sick through the heats, during which Oxford had beaten First Trinity, Cambridge and the Oxford Etonians in succession.³⁵⁰

According to **Treherne & Goldie**, on the day of the final, Menzies "was preparing to take his seat in the boat, almost reeling from giddiness, when he fainted clean away. The crew laid him on a sofa and bore him in procession to their hotel.

"[There being a rule against substitutions,] Oxford then held a council of war and decided to do their best with seven oars. No. 7 moved to stroke, and bow to 7, bow's seat being vacant.

"Oxford had the outside station, the wind blowing fresh off the Bucks shore."³⁵¹ They started; before they reached

³⁴⁴ Drinkwater, pp. 23-4

³⁴⁵ Bourne, *Textbook*, p. 198

³⁴⁶ Lehmann, p. 27

³⁴⁷ Rowe & Pitman, p. 15

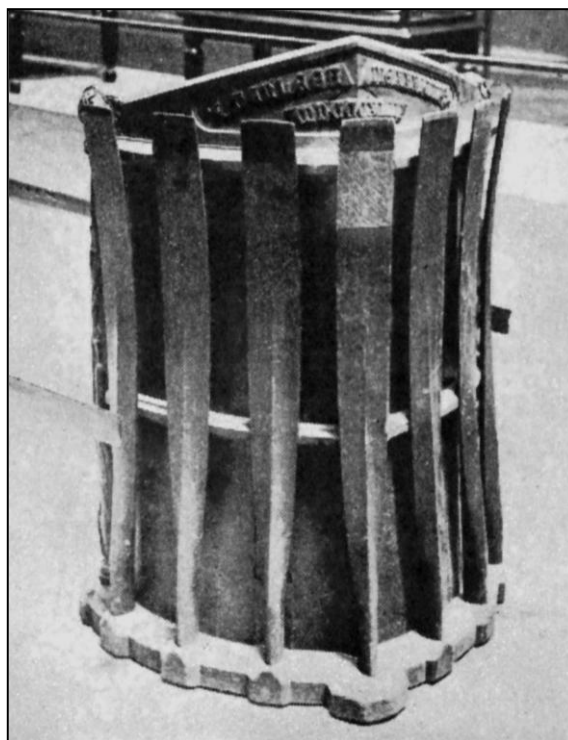
³⁴⁸ Ibid, p. 111

³⁴⁹ Burnell, *Swing Together*, p. 23

³⁵⁰ Treherne & Goldie, p. 143

³⁵¹ This was before log-boom course boundaries had been installed, and it was still possible to hug the Bucks shore in the protection of the bushes when the wind was blowing from that side.

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Rowe & Pitman

The O.U.B.C. President's Chair

Made from the coxswain's seat and the seven oars of the 1843 Oxford Grand Challenge Cup winners.

Remenham Gate³⁵² it was a very open question to all spectators whether the Oxford seven were not as good as the Cambridge eight.

“And so they proved, and even better. Off Fawley Court they began to lead, and drew away steadily. Below Poplar Point³⁵³ they were clear, and by taking their opponents' water, went in winners by nearly a length's daylight, amidst such an uproar as has probably never been heard at Henley.

“The boat in which they rowed was in later years purchased by Mr. Alderman

Randall, and he in 1867 invited the seven, with their quondam stroke, to a banquet at Oxford, at which all but one of the crew and most of the leading oarsmen at Oxford attended. He then presented to the O.U.B.C. a chair the back of which is composed of that part of the boat which contained the coxswain's seat.”³⁵⁴

The chair has been the O.U.B.C. President's Chair ever since.

Migration to Eton

In 1847, Shadwell returned to Eton College to teach them the new technique³⁵⁵ and train them for their race with

³⁵² For details of the landmarks on the Henley course, see Chapter 5.

³⁵³ The very earliest Henley course ended at the Red Lion Hotel near the Henley Bridge. The course made a left turn at **Poplar Point**. Today the course ends at Poplar Point.

³⁵⁴ Terherne, p. 144

³⁵⁵ Byrne & Churchill, p. 174

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Westminster. Egan was umpire. Eton won by a minute and a half.

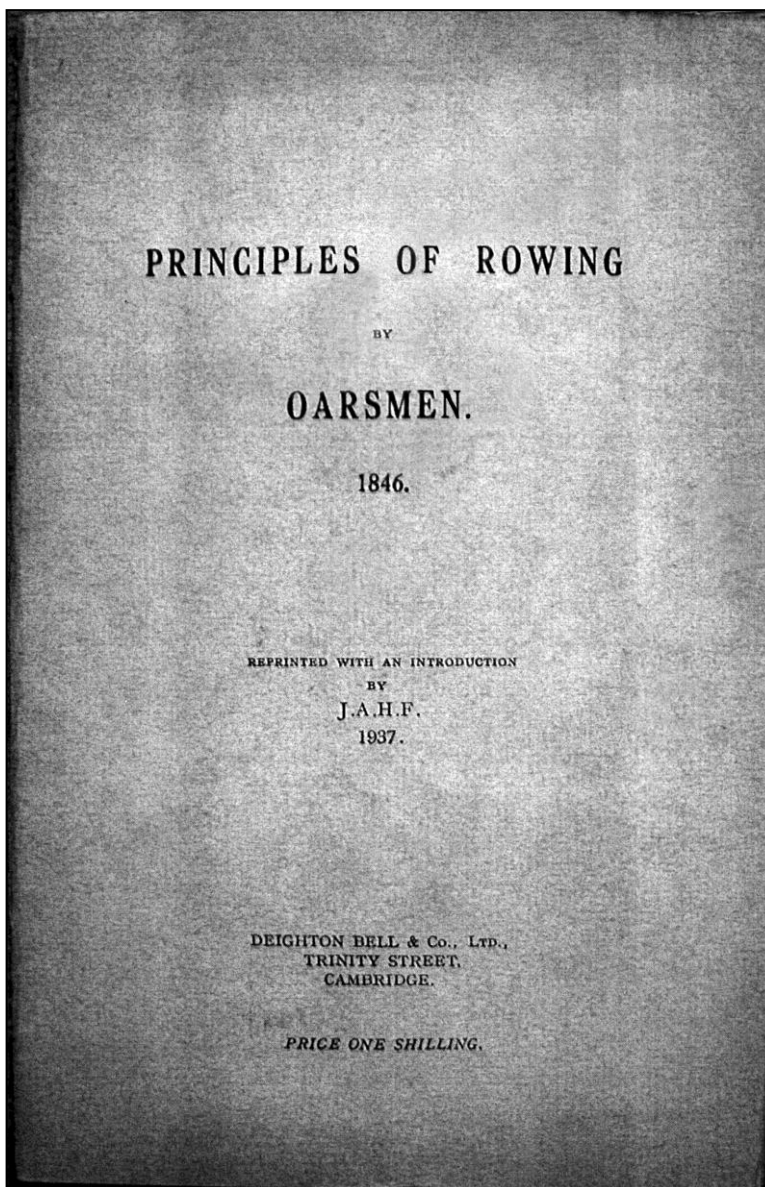
In retrospect, none of late 19th or early 20th Century historians seemed to have completely appreciated the full path of migration of the long-reach innovation that started with London amateur clubs in the 1820s, *then* moved to Cambridge via T.S. Egan after 1836, *then* to Oxford via Shadwell between 1841 and 1842, and *then* on to Eton via Shadwell in 1847.

Nevertheless, almost with the speed of a meteor strike, the original short, choppy waterman's stroke became extinct as a dinosaur, dead as a dodo, except along the commercial quays up and down the River Thames.

Revolutionary boundary. The end of the **Age of Watermen** and the beginning of the **Age of English Orthodoxy**, echoes of which still resonate today from Rafts at Eton to the upcoming 2012 Olympic Games on Dorney Lake.

Shadwell was awarded an Oxford B.A. in 1843 and an M.A. in 1844.³⁵⁶ He only raced in the Boat Race that one time in 1842 before his eligibility ran out, but he and Egan continued to line up against one another. At the Thames Regatta at Putney in 1844, Shadwell coxed the winning Oxford

³⁵⁶ Joseph Foster, op cit, p. 1278



National Rowing Foundation Collection, Mystic Seaport

Gold Cup crew over the Cambridge crew coxed by Egan.³⁵⁷

During the 1840s and 1850s, Egan and Shadwell continued as coaches of Boat Race crews, usually one against the other, always in a relationship of collaboration and mutual respect. Together they brought “between

³⁵⁷ Burnell, *Oxford and Cambridge*, p. 198

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the Universities that *amicabilis concordia* in rowing which has characterized their contests ever since.”³⁵⁸

History’s First Rowing Manuals

From an historical perspective, it would be nice to better understand the nuances of the new technique developed in London in the 1820s and refined by the Cambridge crews of the late 1830s, but the descriptions in Walker’s *Manly Exercises* and in *Bell’s Life* lack specifics. Fortunately for later generations, the efforts at Cambridge and at Oxford have left a more substantial paper trail.

Frederick Brittain’s seminal rowing bibliography, *Oar, Scull and Rudder*,³⁵⁹ lists three sport rowing manuals, history’s first ever, written in the form of pamphlets during the 1840s. All were anonymous. The first was *A Treatise on the Art of Rowing as Practised at Cambridge*, thirty-six pages, published in 1842 under the pseudonym “A Boating Man.” A copy may still exist, forgotten on some book shelf in an English country house, but none has yet been passed down to the present generation. However, it must have described the innovative technique gleaned by the Cambridge team during their trips to London between 1836 and 1839. The most likely author is the only member of the 1839 crew that was still involved in rowing three years later, namely their coxswain and coach, **Thomas Selby Egan**.

Two years later in 1844, a second unsigned manual, *A Treatise on Steering*, was published in Oxford, and according to Drinkwater, it was “the joint production, says *Bell’s Life*, of an Oxonian and a

Cantab. It is believed that these were Messrs. Egan and Shadwell.”³⁶⁰

Arthur Shadwell had been coxing and coaching Oxford Dark Blue Boats since 1842. This pamphlet, too, has been lost to history. Not even Brittain saw a copy when he was compiling his list in 1930.

Journalist and River and Rowing Museum historian **Christopher Dodd**: “Freddie Brittain’s bibliography of rowing attributes this book to Shadwell alone. Whether or not Egan applied his pen to Shadwell’s early work, there are indications that the two thought on similar lines.”³⁶¹

Fortunately, the 1844 pamphlet was expanded to fifty-six pages and republished in Oxford in 1857 under the title *The Principles of Rowing and Steering*.

Treherne & Goldie: “To this day [1883], the pamphlet upon *The Principles of Rowing and Steering* by the Rev. A.T.W. Shadwell is reckoned a standard authority upon aquatics, and the doctrines of training, as well as those of rowing, which are therein laid down, have undergone very little modification even in these days of light-boat rowing.”³⁶²

Though Treherne & Goldie, above, and Brittain gave all the credit to Shadwell, it is likely that the 1857 pamphlet was again the result of collaboration between Shadwell and Egan.

In 1846 came the first rowing manual to actually survive intact to this day, *Principles of Rowing*, twenty-eight pages, published in London, Cambridge and Oxford under the plural pseudonym “Oarsmen,” pointedly suggesting multiple authors.

A copy of the pamphlet was discovered in the 1930s by **John A.H. Freshfield** in his grandfather’s library. The younger Freshfield subsequently republished the

³⁵⁸ Byrne & Churchill, p. 136

³⁵⁹ www.rowinghistory.net/don's_list.htm

³⁶⁰ Drinkwater, p. 32

³⁶¹ Dodd, *Oxford & Cambridge*, p. 91

³⁶² Treherne & Goldie, pp. 141-2

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pamphlet in 1937, which is how its words have survived.

The found copy was inscribed: “Edwin Freshfield, Coxswain of the Cambridge University, June, 1853, from the author, T. Selby Egan.”

Dodd has accorded sole credit to Shadwell,³⁶³ but given the inscription, given the plural “Oarsmen” clue and given the history of Egan and Shadwell, the conclusion that they again collaborated seems inescapable. Accordingly, I have treated them as co-authors of the 1844, 1846 and 1857 works in my bibliography and on these pages.

Principles of Rowing

Here is the description of proper rowing technique from the 1846 manual, *Principles of Rowing*: “To commence a stroke, the arms are at their full extension, the hands well over the toes. The whole body is inclined forward from the hips, but the back is not curved. The head is upright on the shoulders, and the eyes are directed horizontally.

“He should sit rather short [on the thwart], so that in getting forward, *the knees are bent and stick upwards*, and the legs lie apart, which again gradually lengthen while the oar is pulled through the water, and are stretched straight out at the moment of feathering.

“The purchase of the whole stroke is derived from the legs, of which, therefore, too great use cannot be made. It is better to sit rather forward and off the seat than far back on it. [my emphasis]”³⁶⁴



Rowing, Isthmian Library

The London Innovation +55° Body Angle Forward

The innovation that made the London approach possible was simply to allow the knees to rise a few inches during the recovery as the oarsman reached forward while sitting toward the front of his bench seat, but the resulting transformation was spectacular.

The seemingly simple decision to allow a rower’s knees to rise represented a stunning revolutionary breakthrough, for it released the tension in the hamstrings and facilitated the forward rotation of the hips to the point where the straight back and chest could actually begin to approach the still comparatively flat thighs. The forward length of the rowing stroke immediately increased markedly, and, as Egan so forcefully stated, the legs were also harnessed to help move the boat.

The illustration in *Manly Exercises* reproduced earlier in this chapter showed legs held flat and body angle forward of +40°. Allow the knees to rise, and the body angle forward increases to +55° or more. See the illustration on this page.

This London innovation was the first example of mutation in the evolution of

³⁶³ Dodd, *World Rowing*, p. 227

³⁶⁴ Egan, pp. 8-9

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modern sport rowing technique since the sport had been invented perhaps half a century earlier.

The Arc of the Back

The 1846 manual attributed much of the new-found increased boat speed to increased stroke length, and that “the broad principle is the more water rowed through, the better.”³⁶⁵

Principles of Rowing: “The instant the oar touches the water, the arms and body begin to fall backwards [i.e. the back angle begins to open], and the former continuing at their full stretch till the back is perpendicular.

“[The arms] are then bent, the elbows being brought close past the sides, till the hands, which are now brought home sharply, strike the body about the lower ribs.

“At this moment, the back, which *should not be inclined much beyond the perpendicular backwards*, is straight from the hips upwards, i.e. not curved. [my emphasis]”³⁶⁶

This represents two substantial deviations from the *Walker’s* description, which had encouraged more layback and little arm draw.

If the illustrations in *Manly Exercises* are to be believed, the London style made use of 90° of body swing, from +40° body forward. This would contrast with perhaps +15° forward with the old waterman’s stroke.

As for layback, a waterman might have initially leaned back -50° or more, like the Walker illustrations and like lifeguard rowers of today, but he then used the ferryman’s finish to lever himself back to perhaps -15° before taking his oars from the water.

The 1846 manual increased body angle forward from London’s +40° to perhaps +55° by allowing the knees to rise. It decreased the London layback from -50° to perhaps -20°. Overall, whereas the London arc had been 90°, the 1846 Oxbridge version amounted to around 75°, still far in excess of the waterman’s 30-65° total, depending on how you measure it.

Load

The reason that the 1846 manual recommended a decrease in the London arc was the heavy leverage ratio built into the equipment of the era. In the late 1830s, boats and oars were still constructed with the shorter reach of the waterman’s stroke in mind. When the Cambridge crew tried reaching so far forward *and* laying back as well, “it made the stroke too long and lazy, and the last part of it feeble.”³⁶⁷

In rowing and sculling, the word “**load**” is used to connote how heavy the oar *feels* to the oarsman as he pulls it through the water.

The art of rigging a shell for a particular crew rowing a particular technique is a fascinating challenge, and many fine books have been devoted to the subject. For our purposes, we may focus on a few general concepts.

The most important factor in determining how much work an oarsman does is his length in the water. The longer the stroke, the more work he does, and this can vary at the whim of the individual rower or coach. By adjusting how far the athlete reaches or lays back, one can shorten or lengthen the resulting stroke at will.

The most important factor in determining the *perceived heaviness or lightness* of rowing load is the ratio of the distance the **handle** travels in the boat versus the distance the **blade** travels in the

³⁶⁵ Egan & Shadwell, p. 11

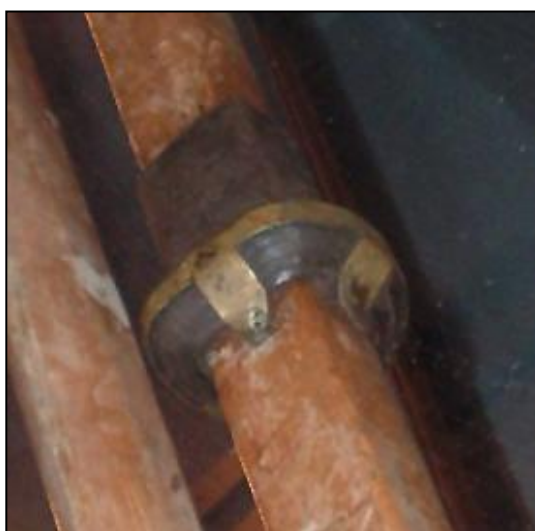
³⁶⁶ Ibid, p. 9

³⁶⁷ Ibid, p. 11

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water. The longer the blade travels in the water for a given amount of handle travel, the heavier it feels. You have more leverage, and it feels easier if the blade travels even a little bit less distance with the same handle motion.

The relationship between handle travel and blade travel mostly depends upon the **inboard/outboard ratio**, the ratio of oar length inboard of the fulcrum to oar length outboard of the fulcrum, which is determined by the particular placement of the collar on the oar shaft.



Patrick Okens

19th Century Oar Collar permanently attached to the oar shaft

Nowadays, this ratio can be micro-managed in minutes by simply adjusting the overall length of the oar and/or by moving the collar. With some oars, it can even be done during practice on the water, but for most of rowing history, including the entire 19th Century, oar length was fixed, and collars were permanently attached to the shafts by their manufacturer. See the illustration.

In addition, since it was necessary to have the handle of the oar traveling more or less in front of the rower during the stroke,

the inboard length of the oar has to be coordinated with the distance of the thole pin outboard from the rower's position on the thwart.

In sweep rowing, this distance is called **spread** in the United States or **span** in Great Britain, and for the first one hundred fifty years of rowing history, it also could not be adjusted easily after the boat had left its manufacturer.

Therefore, once length of body swing was settled upon by the coach, all other aspects of load were completely and inflexibly determined by the equipment.

There is only so much work that an athlete of any era is capable of repeating stroke after stroke. There is only so much distance through the water that rowers can pull through during the average stroke, so since Egan could not change the load on the oars, once he had settled upon his long-reach approach, he had to steer clear of too long layback in order not to overload his athletes.

Elimination of the Ferryman's Finish

Additional changes to the stroke cascaded from Egan's release of the knees as the athlete reached forward. Reduction of the long layback used in the London style and the waterman's stroke obviated the great need for a ferryman's finish, which watermen used in order to laboriously return their bodies to vertical, and which was ridiculed by gentleman rowers of the time, who considered it inelegant, counter-intuitive and counter-productive.

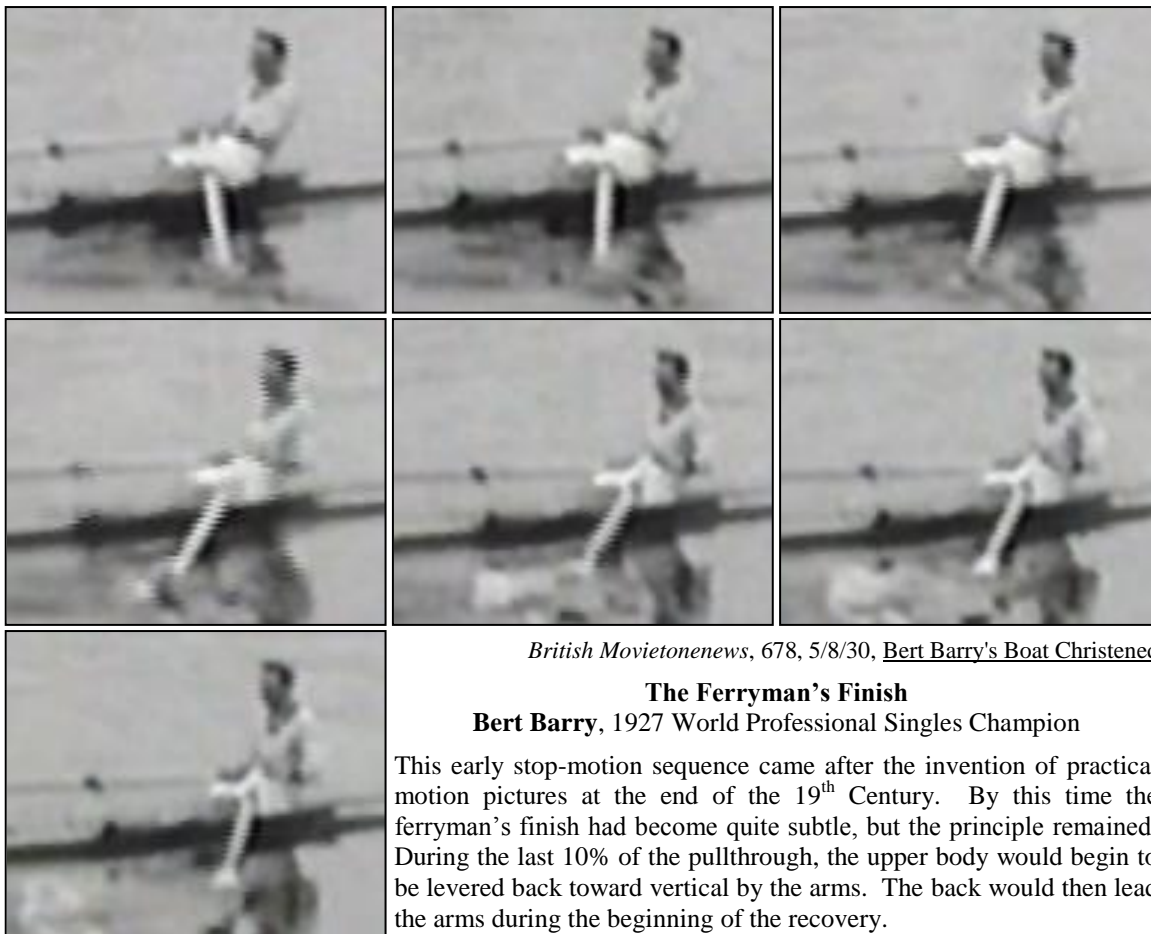
Principles of Rowing: "Doubling the body over at the end of the stroke . . . is both a very ugly and a very bad fault."³⁶⁸

In describing single sculling in 1866, **Edwin Brickwood**,³⁶⁹ the anonymous

³⁶⁸ Ibid, p. 13

³⁶⁹ See Chapter 8.

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British Movietone news, 678, 5/8/30, Bert Barry's Boat Christened

The Ferryman's Finish

Bert Barry, 1927 World Professional Singles Champion

This early stop-motion sequence came after the invention of practical motion pictures at the end of the 19th Century. By this time the ferryman's finish had become quite subtle, but the principle remained. During the last 10% of the pullthrough, the upper body would begin to be levered back toward vertical by the arms. The back would then lead the arms during the beginning of the recovery.

author of another very early surviving British rowing manual, *The Arts of Rowing and Training*,³⁷⁰ stated: "The body should not be allowed to fall back too far. The power applied of itself will gradually diminish as the stroke is brought to an end, but the 'waterman's dig' and jerk should, above all things, be avoided as no boat is so

susceptible of downward pressure as a thin, fragile sculling outrigger."³⁷¹

Rudie Lehmann described the release technique of professional watermen as follows: "All they apparently did was to lug with the arms towards the finish of the stroke."³⁷²

Rowing historian **Richard Burnell** called it "something of a hoick at the finish."³⁷³

Lehmann persuasively stated the English Orthodox rationale for the eradication of the **ferryman's finish**: "Do not meet your oar, i.e. keep your body back

³⁷⁰ the third surviving rowing manual after Egan's and Shadwell's *Principles of Rowing* and an 1852 work by J.S. Bateman, mentioned below. Brickwood's 1866 work was also written anonymously, using the pseudonym "Argonaut" which he also employed as aquatics correspondent of *The Field*, a popular London sports paper of the time.

³⁷¹ Brickwood, p. 72

³⁷² Lehmann, p. 26

³⁷³ Burnell, *Swing*, p. 23

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until the hands have come in. If you pull yourself forward to meet your oar, you will certainly shorten your stroke, tire yourself prematurely, and will probably fail to get the oar clean out of the water or to clear your knees on the recovery."³⁷⁴

However, the ferryman's finish is a natural, almost inevitable, byproduct of any pullthrough where the back finishes its propulsive swing prior to the end of the stroke. The arms physically cannot continue to accelerate the boat well by themselves, so a determined rower, unable to accelerate the handle to his body, will tend to bring his body to the handle.

By allowing the back to reverse direction prior to the finish of the stroke, the ferryman's finish allowed the Thames waterman to begin to return toward vertical from the considerable layback he had inherited from his artisan predecessors.

While many coaches today still consider the ferryman's finish a technical flaw to be consciously avoided, many Americans even using derisive descriptions like "bucking the oar" or "doing a chin-up into the oar," Thames professionals back in the 1880s considered it a key element of good rowing technique, and we will discover that it has been used repeatedly to good effect at the highest levels of competition throughout the 19th and 20th Centuries and even today.

Only Three Issues

Throughout all of history, when rowing technique is stripped of disagreements about minor points of style and boiled down to its very essence, the reader may be surprised to discover that there are only three issues which have truly divided coaches down to the present.

Just three.

The ferryman's finish is the first.

³⁷⁴ Lehmann, *Rowing*, p. 29

The Use of the Arms

As will be discussed at length in later sections of this book, professional watermen also tended to actively strain at their oars with their arms right from the entry. The 1846 manual rejected this approach.

"To commence a stroke, the arms are at their full extension, and [they continue] at their full stretch till the back is perpendicular."³⁷⁵

So in another break with the traditional waterman's stroke, Egan and Shadwell considered the arms to be mere connecting rods during the majority of the stroke. Backs were to be used first and arms only afterward.

Of the three fundamental issues which have divided coaches throughout history down to the present, **the appropriate use of the arms during the first half of the rowing stroke** is the second that we have encountered after the ferryman's finish.

Force Application

Thanks perhaps to their experience dealing with the challenge of load, the authors of *Principles of Rowing* also developed a strong preference as to the way force should be applied during the rowing stroke. The number one fault listed was: "Jerking, which is caused by pulling the first part of the stroke with violence and not falling gradually backwards to finish it."³⁷⁶

"Work should always be commenced soon, at the first dash of the oar into the water,"³⁷⁷ but the effort must then continue uniformly. The ideal was to pull "lively through the water . . . and he is the best man who rows through the greatest space of water in the shortest time."³⁷⁸

³⁷⁵ Egan & Shadwell, pp. 8-9

³⁷⁶ Ibid, p. 12

³⁷⁷ Ibid, p. 17

³⁷⁸ Ibid, p. 12

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This is extremely significant. History's first surviving detailed description of rowing technique *written by rowers themselves* included specific advice as to *how* to apply pressure on the pullthrough, a subject that later books and manuals down to this very day have all too often ignored!

The 1846 manual was the first to describe a force application protocol which **German Democratic Republic** scientists some one hundred forty years later would name *Schubschlag* or "thrust stroke," a strong surge from entry to release.

They contrasted *Schubschlag* with *Kernschlag* or "solid stroke with a hard beginning,"³⁷⁹ which both they and Egan and Shadwell rejected.

After the ferryman's finish and use of the arms during the first half of the rowing stroke, the issue of **force application** will turn out to be the last of the three great issues which have truly divided coaches throughout history:

1. **Ferryman's Finish or Not**
2. **Active or Passive Arms**
3. ***Schubschlag* or *Kernschlag***

At first blush, these might seem to the reader an unlikely list of the only truly fundamental issues in rowing technique. Surely there must have been more concerns. Surely there must have been more *important* concerns over the last two centuries! Surely there are more important issues in play today.

As we shall discover, history indicates no.

Unfortunately, the names of the first true innovators in London, the men who were Egan's inspiration, have been lost in time, but it was Egan and Shadwell who adapted, improved and spread their message

to the Universities and through their pamphlet, to future generations.

Certainly not every facet of Egan's and Shadwell's preferred technique has been adopted by every successful rower down to the present era, but it is interesting to note that every significant *issue* in rowing technique debated today was already being addressed in 1846 by these two great men.

This means that the rower and coach of the modern era have more than one hundred sixty years of past experience to call upon in order to help them make the best decision as to how they want to approach moving boats today.

Professional Coaching

The contributions to rowing history of T.S. Egan and A.T.W. Shadwell did not stop with their coaching or with their 1842, 1844, 1846 and 1857 rowing manuals. They also had strong feeling about professional watermen.

Even as coaches, watermen competed hard, being quite prepared to foul in the process, and it was Egan and Shadwell who were at the forefront of the mid-19th Century movement to purge professional coaches from all phases of gentleman's rowing.

Egan: "Eight-oared rowing necessarily declines from its high perfection in the hands of watermen,"³⁸⁰

It all came to a head at Cambridge three years after the publication of *Principles of Rowing*.

Lehmann: "Although [Cambridge] had in Mr. T.S. Egan a member of no common skill and experience ready and willing to help her, she preferred in 1849 to entrust the management and control of her crew to

³⁷⁹ Herberger, p. 74

³⁸⁰ Egan, qtd. by Scott Bennett, Australian National University

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Robert Coombes.³⁸¹ If we may believe a letter in *Bell's Life*, the foul that marred the second boat-race in 1849³⁸² was in large measure attributable to instructions given by Coombes to the Cambridge coxswain. This professionalism on the part of Cambridge led to a breach between the C.U.B.C. and Mr. Egan, and in 1852, being then on a visit to Oxford, Egan offered his services as coach to the Dark Blues.

"The offer was accepted, and the resulting Oxford Crew, one of the finest ever put on the water by the O.U.B.C., won the race against Cambridge by six lengths."³⁸³

"Cambridge reverted to better methods, the quarrel between them and Tom Egan was made up, and in 1854 he was not only put in charge of the Cambridge crew but was actually made President of the C.U.B.C., though he had taken his degree so far back as 1839. Since that time there has been no professional control or coaching of University eights [as of 1908]."³⁸⁴

A.T.W. Shadwell coached Oxford against the Egan-coached Cambridge crews

in 1854 and 1858³⁸⁵ as their collaboration and friendship continued.

Soon professionals were being spurned as coaches of amateurs in every sport. You might recall that in the 1981 film *Chariots of Fire*, English 1924 Olympic Champion 100-meter sprinter Harold Abrahams had to hide the fact that he employed a professional trainer by the name of Sam Mussabini.

The Role of the Coxswain

The further influence of Egan and Shadwell on their sport cannot be underestimated. Not only did they banish professional watermen from coaching and training University crews in favor of guidance from within the team itself, but they also elevated the role of the coxswain.

Lehmann: "Coxswains, to be sure, will refer you to the early history of rowing, and will point to the honoured names of Tom Egan and Arthur Shadwell, who for many years not only steered the crews of their respective Universities, but also took command of them and coached them. In and out of the boat, their word was law. They did not confine themselves to trite admonitions in regard to time or feather, but they acted as style-masters and trainers of their galley-slaves, and lorded it over the world of oarsmen."³⁸⁶

Postscript: A.T.W. Shadwell

In 1850, Arthur Shadwell became rector of St. Wilfred's Church in Langton, Yorkshire. He moved on to the ancient church of St. Mary, Little Ilford, near London, in 1879.³⁸⁷ In around 1888, when he was about 68 years old, he had a memorable chance encounter with rowing

³⁸¹ The second-ever rowing manual to survive to the present day, *Aquatic Notes: Sketches of the rise and progress of rowing at Cambridge by a member of the C.U.B.C.*, 1852, by J.S. Bateman, contains *Hints on Rowing and Training* by Robert Coombes. According to Freshfield, "Upon the principles of rowing, Egan and Coombes do not differ substantially." – Egan, *Principles*, p. 3

³⁸² Cambridge took an early lead and as they say, "took Oxford's water," moved over in front the Oxford boat. When Oxford caught back up, Cambridge did not move back into its own water quickly enough and was bumped from behind. Oxford later crossed the finish line second but was awarded the win due to the foul. It is the only occasion in Boat Race history that a race has been decided on a foul, - Dodd, *Oxford & Cambridge*, p. 92

³⁸³ Lehmann, p. 14

³⁸⁴ Lehmann, p. 16

³⁸⁵ Burnell, *Swing*, p. 23; Burnell, *Oxford and Cambridge*, pp. 241-2

³⁸⁶ Lehmann, p. 97

³⁸⁷ www.british-history.ac.uk

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coach and historian, **Rudie Lehman**, then 32, which gives us some sense of Shadwell as a man of ardent opinion.

Lehmann, remembering in 1908: “It was my privilege some twenty years ago to meet and converse with the Rev. Arthur Shadwell. The ancient hero had been sculling himself and his little bag of belongings down the river when he had been observed from the grounds of Abney House³⁸⁸ by Mr. Charles Hammersley. More than fifty years before, these two had been at Eton together,³⁸⁹ and Mr. Hammersley recognized his former companion. He also remembered his nickname, and hailed him by it.

“Skum!’ he called out; and the whilom king of the O.U.B.C. meekly answered to the call, made fast his skiff, and stayed a fortnight in his old friend’s hospitable house. It was there that I met him and hung upon his lips.

“Mr. Shadwell certainly had strong views. He was willing to admit that modern oarsmen were usually heavy and sometimes powerful, but there his eulogy, such as it was, stopped. They were, he said, universally of an appalling ignorance modified by an almost insane rashness.

“Style had perished from the land. Where, for instance, were the straight backs, the polished feathers, the long and massive body-swings, the crashing strokes of the brothers Menzies and other demigods of the past? They were gone, and only movements fit for an asylum of the halt and the maimed had taken their place.

“Talk to *him* about the sliding seat?³⁹⁰ In that invention of the devil, you had the root of all our ills. Men had forgotten all

³⁸⁸ near Lehmann’s own home in Bourne End, near Cookham, midway between Henley and Eton on the River Thames.

³⁸⁹ Hammersley had been coxswain of the Eight in 1835, a year before Shadwell held the same position.

³⁹⁰ See Chapter 8.



St. John’s Cemetery, Margate

In Memory of
THOMAS SELBY EGAN
BORN 25TH DECEMBER 1814
DIED 11TH MAY 1893
CAMBRIDGE UNIVERSITY COXSWAIN
1836, 1839, 1840
12 YEARS UMPIRE AT HENLEY
“ASK FOR MERCY”

about the true science of boatbuilding and relied on a seat that moved backwards and forwards. They ought to be screwed to their thwarts, sir, yes, screwed to them; but instead of that, they shuffled to and fro like a row of louts at a fair.

“I tried to reason with the angry old gentleman. I got into a boat to show him how we understood the matter and executed it. His peals of scornful laughter woke the

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echoes and startled the remotest waterfowl of the Cookham reach.

“Then he ordered me out and took my place, and for five minutes showed me the true style. Several times, having failed to adjust the straps to his feet, he fell backwards in the boat, but his ardour and his contempt were proof against catastrophe; he waved it aside and proceeded with his demonstration. It was a remarkable lesson, and I have never forgotten it.”³⁹¹

Reverend Arthur T.W. Shadwell passed away about five years later in 1893.³⁹²

Postscript: T.S. Egan

When not occupied with rowing, T. Selby Egan was an accomplished linguist, translating works of Heine and Schiller from German into English and publishing them.³⁹³

He practiced as a barrister and served as a major in the 3rd London Rifle Volunteers.³⁹⁴

For many years he was the editor of *Bell's Life*, the weekly sporting newspaper which through its exhaustive coverage in the following decades continued to define the sport of rowing for the British public.

Egan also died in 1893, having retired to a guest house on the channel coast. He is buried there in Margate Cemetery.

In the history of rowing technique, Thomas Selby Egan and Arthur Thomas Whitmore Shadwell were the first to successfully bequeath their words and thoughts to future generations, descriptions which can be followed today as easily as they could in 1846. All who have followed to the present day, myself included, owe a great debt to them.

³⁹¹ Lehmann, pp. 97-8

³⁹² www.british-history.ac.uk

³⁹³ www.margatehandbook.co.uk

³⁹⁴ Dodd, *Oxford & Cambridge*, p. 91

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7. English Orthodoxy Evolves

Layback

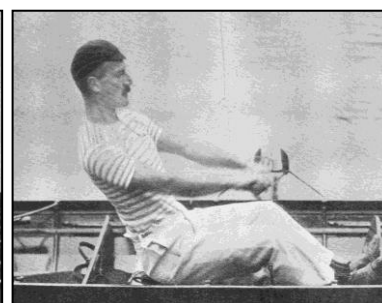
Despite changes in equipment, most notably the sliding seat, Egan's technique remained virtually unchanged in its basic fundamentals as it slowly evolved over the next fifty years into what became universally known as **English Orthodox Technique**.

In fact, well into the 20th Century, it was still considered essential in Britain to teach Orthodox rowing to beginners on fixed seats with thole pins so that they could be steeped in the basic truths first articulated by Egan and Shadwell in the 1840s.

Lehmann: "Its chief object is to give the novice practice in certain essential elements of the stroke, and particularly in body swing, which could not be so easily taught, if at all, if he were to begin at once on sliding seats."³⁹⁵

It was as if a rower had to go through his own personal evolution, had to experience a pollywog stage before being allowed to evolve into a frog.

In 1897, Lehmann's description of fixed-seat rowing differed little from that of Egan and Shadwell, with the possible



Rowing, Isthmian Library

Pre-Sliding-Seat

English Orthodox Rowing

The back initiated the drive with arms held straight until close to the end of the pullthrough. The body swung through an arc from +45° forward to -20° past vertical. Arms completed the pullthrough without a ferryman's finish while the back remained motionless..

exception of his description of force application, which contained more than a suggestion of *Kernschlag*.

Lehmann: "Raise the hands, and the blade will be covered. At the same moment and without the loss of a fraction of a second, swing the body and shoulders back

³⁹⁵ Lehmann, *Rowing*, p. 30

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as though they were released from a spring, the arms remaining perfectly straight and the feet helping by a sharp and vigorous pressure (from the ball of the foot, and the toes especially) against the stretcher.

“The result of these rapid combined movements will be that the blade will strike with an irresistible force (a sort of crunch, as when you grind your heel into gravel) created by the whole weight-power of the body applied through the straight lines of the arms and aided by all the strength of which the legs are capable.

“The arms are connecting rods during the greater part of the stroke, and it is futile to endeavor to use them independently of the body weight, which is the real driving power.

“Just before the body attains the limit of its back-swing, which should be at a point a little beyond the perpendicular, begin to bend your arms for the finish of the stroke, and bring the hands square home until the roots of the thumbs touch the chest about three inches below the separation of the ribs.”³⁹⁶

Here is another description of the English Orthodox pullthrough during the days before sliding seats:

Rowe & Pitman: “Let him at once cover his blade . . . keeping his arms straight for the greater part of the stroke, allow the weight of his body swung back from his hips, with the [foot] stretcher as its support [i.e. suspending his body weight on the oar



Riefenstahl, *Olympia, Teil II: Fest der Schönheit*

Leander Club

1936 British Olympic Eight, Berlin-Grünau

6 **John Couchman** 185 lb. 84 kg, 7 **Hugh Mason** 174 lb. 79 kg,
Stroke **Ran Laurie** (See Chapter 3) 188 lb. 85 kg

Extreme layback became a part of English Orthodoxy and persisted to the middle of the 20th Century and beyond.

(Note the use of thole pins as late as 1936.)

handle³⁹⁷], to carry the blade through the water. At the finish, let him row his hands straight up into his chest.”³⁹⁸

Increased Layback Becomes Part of English Orthodoxy

It took a number of years, but as Egan’s followers continued to see value in longer

³⁹⁷ For those of you unfamiliar with concept of “suspending” your weight on the oar handle, you can get a feel for it by sitting on an ergometer or rowing simulator. Take hold of the handle, and come to the entry position. Now have a teammate prevent the handle from moving toward you as you apply pressure. By pulling on the handle, you can literally lift your rear off the seat and “suspend” your weight between the footstretcher and the handle.

³⁹⁸ Rowe & Pitman, p. 19

³⁹⁶ Lehmann, op cit, pp. 27-9

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and longer pullthroughs, they began requesting of boatbuilders that they make the necessary geometric adjustments to oar length, collar placement, oarlock technology, pin placement and spread so that crews could lay further and further back without experiencing binding or oppressive load.

Eventually, many crews were practically lying down in the bows of their boats at the finish of the stroke.

Thus gradually emerged the next evolutionary iteration of English Orthodox Technique, and the long-layback version reigned supreme in England well past the end of the 19th Century and could still be seen into the second half of the 20th Century and beyond to the present day.

Posture

Given a back swing that could exceed 90° of arc, it is not surprising that English Orthodox Technique came also to emphasize the rigid posture and discipline of motion first described by Thomas Egan and Arthur Shadwell.

English Orthodoxy “held that a back of perfect, poker-like straightness was an absolute necessity . . . straightness of back tends to lengthen the swing and to strengthen the finish . . . To make this firmness of body effective, the shoulders must be kept square.”³⁹⁹

In his more than half-century in the sport, **Mike Spracklen** has become a rowing philosopher and historian as well as a World and Olympic Champion coach. He has been a student of English rowing technique since he was a lad at Marlow Rowing Club.

Spracklen: “They started rowing on fixed seats, and from that evolved the straight back.

“The style was developed in the British public school system in the 1800s. It was designed to protect lower backs because the young lads were physically underdeveloped. They rowed for three months out of the year, and they didn’t have time to develop because of the limits on their training.

“Keeping the back straight allowed them to safely row longer, more powerful strokes, and it became the main feature of Orthodox Technique.”⁴⁰⁰

Active or Passive Arms?

Spracklen: “Orthodox oarsmen were also recognized for their straight arms. At the catch, we just hung on with our arms, and it was a natural way to go.”⁴⁰¹

Sequentiality

The pre-sliding seat English Orthodox sequentiality of backs first and arms later was the first application in rowing history of the biomechanical principle “**Summation of Segment Velocities**, which states that the production of maximum velocity (in the case of rowing, velocity of the hands) requires the use of joints in order, from largest to smallest,”⁴⁰² which would place backs first and arms last.

A “biomechanical principle” has the ring of authority, and this particular biomechanical principle also has intuitive heft. **Thor Nilsen**, current Development Director of the Fédération Internationale des Sociétés d’Aviron (FISA), has told me: “I think it’s common sense. It is the natural way.”⁴⁰³

Note the commonality of language between Spracklen and Nilsen. Searching for “natural” answers to questions of rowing

³⁹⁹ Ibid, pp. 22-3

⁴⁰⁰ Spracklen, RCA Coaches’ Conference, 2005

⁴⁰¹ Spracklen, op cit.

⁴⁰² Carter, RCA Coaches’ Conference, 2005

⁴⁰³ Nilsen, personal conversation, 2005

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technique is a recurring theme throughout rowing history.

The issue of whether the arms should actively participate early in the pullthrough or passively hang on at the entry would become even more complicated after the introduction of sliding seats, when

significant leg motion had to be integrated into the mix of backs and arms. Indeed, it will be argued with particular passion since those who hold that arms should be used last believe that they have both science *and* common sense on their side.

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8. The Sliding Seat is Introduced

E.D. Brickwood – F.S. Gulston



National Gallery of Art

Thomas Eakins, *The Biglin Brothers Racing*, 1872

Schuylkill River, Philadelphia

American professionals on their first sliding seats.

In 1839, Tom Egan's revolutionary idea of allowing the knees to rise a few inches brought an immediate increase in boat speed by allowing a stroke achieved through maximum forward swing of the body, but swiveling the hips that far forward on a hard wooden bench was uncomfortable at best.

American historian **Samuel Crowther**:
“In the stroke of the fixed thwart,⁴⁰⁴ the legs had some use, and much stress was put on their employment. The best oarsmen raised themselves from the thwart at the beginning of the stroke, and the advantages of a

⁴⁰⁴ bench seat

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movement of a few inches on the seat were well recognized. Gradually they began to make the thwart wider.⁴⁰⁵

Scientist **John R. Hale**: “In the 1850s and 1860s, rowers in the U.S., Canada and Britain began to experiment with a pad of ‘wash leather’ (a soft, pliant leather) sewn to the seat of their rowing trousers. When these pads were greased, the rower could slide.”⁴⁰⁶

But greasing the rower’s pants, the so-called “buckskin and butter” approach, also had its drawbacks, and rowing manuals of the day often included “various medicinal potions to deal with the boils and blisters that resulted,”⁴⁰⁷ and many a gentleman oarsman had to “eat his breakfast off the mantelpiece”⁴⁰⁸ after crew practice.

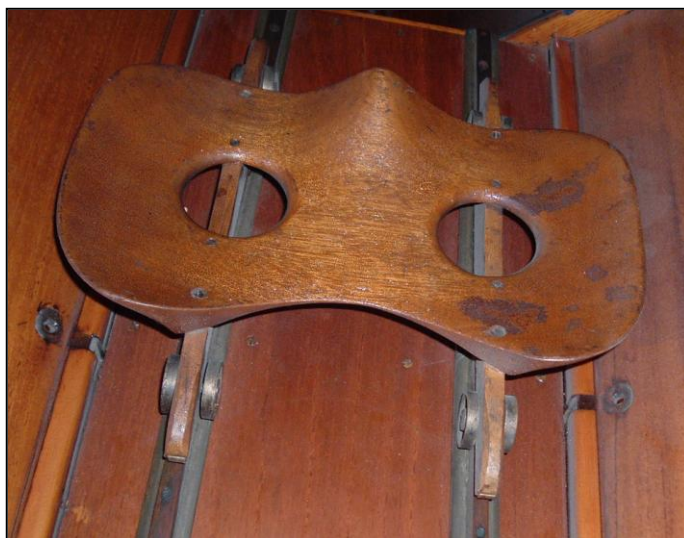
Mechanical ingenuity soon began offering practical solutions. During the 1860s, the mechanical sliding seat was “gradually evolving itself from a pair of well-greased breeches that rubbed up and down a long seat made so that the grain of the wood ran fore and aft, and was turning into a thin board running on oiled runners,”⁴⁰⁹ then a seat “balanced on glass balls that permitted it to move with the least possible friction,”⁴¹⁰ and finally into a seat mounted on wheels and sliding along tracks.

American boatbuilder **John C. Babcock** of the Nassau Boat Club of New York was perhaps the first to develop a reliable sliding seat, but his intent had nothing to do with leg drive.

Crowther: “He found difficulty in properly placing the seats [in relation] to the rowlock. At a distance of nine inches abaft the thwart, the catch was strong and easy but the finish poor, while at fifteen inches the catch was faulty and the finish good.

“He found that to both catch and finish well, the oarlock should move about six inches. Since this was impracticable, he conceived the idea of moving the seat.

“It was merely a mechanical aid to



Patrick Okens

Sliding Seat of Ned Hanlan

World Professional Singles Champion 1880-1884

By the 1880s, seat technology was virtually indistinguishable from 20th Century versions.

getting the oarsman into the best position for the catch and for the finish, and the fact that the legs could be made a part of the stroke was not apparent.”⁴¹¹

Babcock: “When we take into consideration that the best oarsmen in the world slide, when surting,⁴¹² from four to six inches on a fixed seat, the moveable seat can only be considered as a mechanical

⁴⁰⁵ Crowther, p. 237

⁴⁰⁶ Hale, p. 83

⁴⁰⁷ Ibid.

⁴⁰⁸ Steve Fairbairn, qtd. by Burnell, *Swing*, p. 10

⁴⁰⁹ Eckford, p. 191

⁴¹⁰ Ibid.

⁴¹¹ Crowther, p. 238

⁴¹² the 19th Century term for “sprinting.”

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contrivance intended for a better accomplishment of the sliding movement in rowing.”⁴¹³

British artist, rowing journalist and historian **Geoffrey Page** (1929-2002): “[The sliding seat] was used for the first time by a rowing crew in May 1870, on the opening day of the Hudson Amateur Rowing Association at Pleasant Valley [New York] by the Nassau Boat Club, and the novelty was brought back to England by a crew of Tyne professionals⁴¹⁴ who had been racing in America.”⁴¹⁵

Suspicion

Thomas Eakins historian **Helen Cooper**: “Initially, there was considerable discussion among rowers as to its advantages, and periodicals such as *Turf, Field and Farm* kept readers up-to-date on the division between the ‘sliders’ and the ‘anti-sliders.’

“Nevertheless, by 1872 virtually every shell had slides in some form.”⁴¹⁶

The new technology was treated with considerable suspicion among American colleges. Even as late as 1887, **Julian Hawthorne**, an old Yale oar, wrote in *The Century Magazine*, “I should like to know precisely how much difference they make in the time of a boat. Not many seconds, probably. They lengthen the stroke, of course; but, on the other hand, they make it slower.

“The spurting stroke in those [pre-sliding seat] days used to go up as high as 48 to the minute, and be pulled through at that. At present, 40 or 42 is the maximum; and as the strength with which the oar is dragged

through the water has not increased in the same ratio as the distance through which it is dragged, the gain must be limited.”⁴¹⁷

Hawthorne was absolutely correct. In 1952, **Richard Burnell**, coach, historian and 1948 Olympic Champion sculler,⁴¹⁸ published a study of British times recorded during the decade before and the decade after the introduction of sliding seats. He found no improvement.

Burnell: “It is probably true, of course, that fixed seat rowing had reached its zenith about 1870. It is certainly true that for some time after the introduction of sliding seats, their proper application was not fully understood.

“But even so, one cannot escape the inference that for some ten years the winning crews, both in the Boat Race and at Henley, would apparently have been hard put to beat their fixed-seat predecessors.”⁴¹⁹

Sliding seats had also been greeted with disdain by many in England. **Arthur Shadwell**⁴²⁰ considered the sliding seat “an invention of the devil, and in it was the root of all our ills.”⁴²¹ However, there actually were a few people in Great Britain willing to give sliding seats a chance.

In the spring of 1873, **Edwin Dampier Brickwood** (1837-1906) and **John Henry Walsh** (1810-1888), respectively the aquatics correspondent and editor of *The Field*, a popular British sports periodical, placed a four-oared shell on trestles in front of **The London Rowing Club**⁴²² boathouse, and **Francis Stepney Gulston** (1845-1917) climbed in. His strokes through the air were marked off, demonstrating that even the

⁴¹³ Qtd. by Dodd, *Henley*, p. 77

⁴¹⁴ The River Tyne in North East England flows through Newcastle upon Tyne, an early hotbed of rowing.

⁴¹⁵ Page, p. 9

⁴¹⁶ Cooper, p. 126

⁴¹⁷ Hawthorne, p. 179

⁴¹⁸ See Chapter 17.

⁴¹⁹ Burnell, *Swing*, p. 19

⁴²⁰ See Chapter 6.

⁴²¹ Qtd. by Dodd, *Henley*, p. 74

⁴²² one of the major Metropolitan clubs on the Tideway. They row with white blades with two dashed blue lines toward the tip.

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very short nine-inch slides then being used by English boatbuilders yielded eighteen inches of additional length at the blade.⁴²³

Brickwood and Gulston were among the most influential rowers of their day. Besides writing for *The Field* under the pen name “Argonaut,”⁴²⁴ Brickwood had won the **Wingfield Sculls**, the amateur singles championship of England,⁴²⁵ in 1861 and had (anonymously) written *The Arts of Rowing and Training* in 1866.

Gulston eventually won twenty times at Henley, three times winning in a pair, four and eight on the same day. Rudie Lehmann wrote a poem about him:



Dodd, *Water Boiling Aft*

Francis S. Gulston 164 lb. 74 kg

They can't recall, but ah, I can,
How hard and strong you looked, Sir,
Twelve stone and every inch a man,
Unbeatable and uncooked, Sir.

⁴²³ Dodd, *Henley*, p. 193

⁴²⁴ Dodd, *Water Boiling Aft*, p. 67. See Chapter 6.

⁴²⁵ “The ‘Wingfield Sculls’ were founded in 1830, given by the donor whose name they bear, to be held as a challenge prize by the best sculler of the day from Westminster to Putney [5¾ miles], against all comers, on the ‘4th of August for ever’ – so a silver plate in the lid of the old box which holds the silver sculls bears testimony.” – Woodgate, p. 29

With you to speed the hours along
No day was spent dully,
Our stalwart, cheerful, matchless, strong,
Our undefeated Gully.⁴²⁶

Less than two months after the demonstration on The London Rowing Club dock, which was reported by Walsh in *The Field*,⁴²⁷ both Oxford and Cambridge were using sliding seats for the first time in the Boat Race of 1873.

The Recovery

The inclusion of sliding seats required integration of their movement into the cycle of the recovery.

Spracklen: “On the recovery, the hands went first, and the body went forward as the seat remained at the back stops, and by swinging from the hips instead of the back, we were able to get our weight on our feet to control the slide forward.

“If you come up forward on your coccyx, you bucket.⁴²⁸ Hurry forward on the slide, and it's more difficult to control.”⁴²⁹

Evolution in Oars

Sliding seats also forced an evolution of oar design. As slides “grew gradually longer, the strain at the beginning of the stroke became too great for oars as they were then constructed, and they became apt

⁴²⁶ Lehmann et al., pp. 147-8

⁴²⁷ *The Field*, March 1, 1873, per Woodgate, p. 107, Dodd, *Water Boiling Aft*, p. 67

⁴²⁸ having the body continue forward after the seat has reached the stern end of the track. The American term is “lunge.”

⁴²⁹ Spracklen, op cit.

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Author

A Girder Oar

A cross section of the solid shaft was shaped like an I-beam.

to break at the collar, which was secured by iron nails driven right through the loom, compromising the integrity of the wood.

“This caused **Messrs. Ayling**, oarmakers at Putney, to bring out their patent button. The leather was no longer held by nails driven through the loom, but attached to a brass plate at several places along the loom by short screws.⁴³⁰

“But the trouble with oars was not yet over, for the increasingly vigorous use of the long slides caused them to whip and screw and wobble in the water.

“In 1896, a so-called ‘**girder**’ oar was invented in America, and before the end of the century, Ayling introduced their ‘**double girder**.’ The Belgian winners of the Grand [Challenge Cup at Henley] in 1906, 1907 and 1909 brought with them oars with **hollow looms** of French invention, and this suggested to Messrs. Ayling the ‘**tubular**’ oar, a built-up oar with tubular loom and a blade in three pieces.”⁴³¹

Tubular wood construction was employed all the way until the late 1970s

when oars with tubular shafts made of fiberglass and/or carbon fiber began to replace those made of wood.

No Evolution in Technique

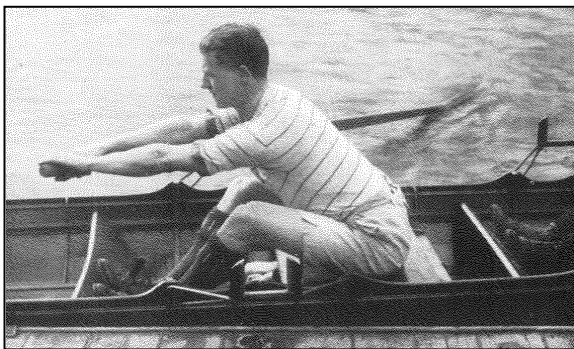
In the photos on the next page of an athlete in a tub pair, the craft used in those days for rowing instruction, the significant difference in length at the entry brought about by a sliding seat is obvious. By sacrificing what seems to the modern eye only a relatively small amount of body angle forward, an athlete with a sliding seat transported himself *en masse* toward the stern, with a corresponding increase in reach. (Note the blade positions at the entry relative to the thole pin on the outrigger behind the athlete.)

However, even a small sacrifice in body swing was unacceptable to the true English Orthodox followers. The Orthodox community seemed unwilling (or unable) to perceive slides as an opportunity to re-engineer the rowing stroke, witness the following exchange between American and British periodicals, as reported by Samuel Crowther:

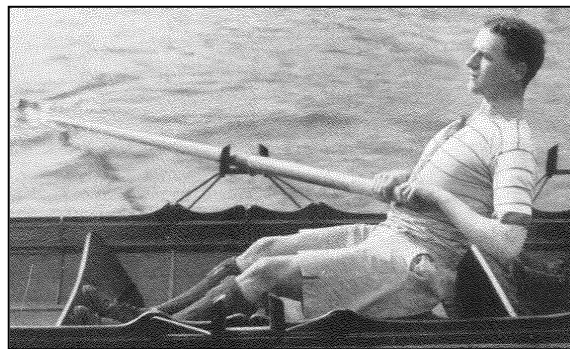
⁴³⁰ See photo, Chapter 6.

⁴³¹ Byrne & Churchill, pp. 218-9

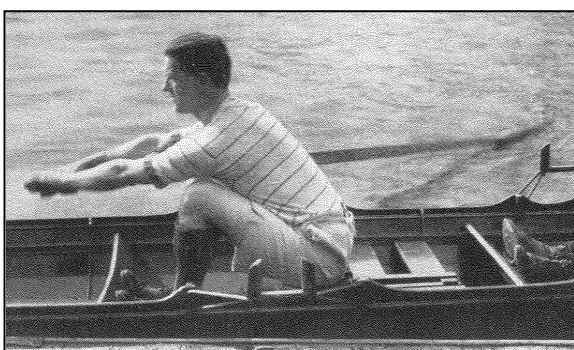
THE BIRTH OF ENGLISH ORTHODOXY



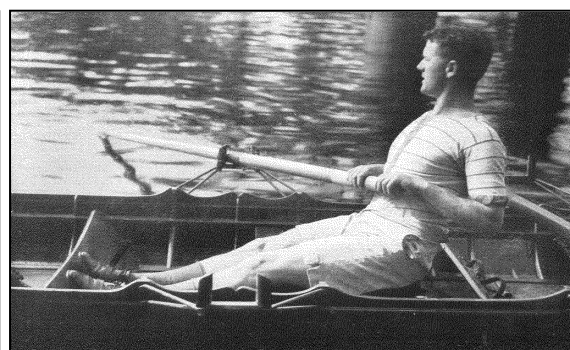
Fixed Seat
Entry Position, +43° back angle



Fixed Seat
Release Position, -30° layback



Sliding Seat
Entry Position, +39° back angle



R.C. Lehman, *The Complete Oarsman*
Sliding Seat
Release Position, -30° layback

The release positions were unchanged, within the boat and out at the blade.
The entry positions were similar from the waist up, but note that the use of the slide allowed the blade to swing more than a foot further toward the bow.

The Spirit of the Times (New York): “Few comprehended the real way to utilize the new invention. Some slid [= legs] and did not row [= back]; some rowed and did not slide; some rowed first and slid afterwards. But all tried merely to engraft the new motion on to their old style, and none grasped the central idea that old things had passed away, and that the corner-stone of the new dispensation was the substitution of slide [= legs] for swing [= back].”⁴³²

Land and Water (London): “I fancy that the majority of our English oarsmen will

hardly agree that the secret of good sliding is the substitution of slide for swing, but rather that the difficulty of the new departure is the art of adding the advantage of the slide to the swing without entirely spoiling the latter valuable motive power.”⁴³³

In retrospect, this exchange captured a conversation that would continue into the 21st Century. The English Orthodox view that leg drive and back swing are separate functions is still heard today. The view that the two must be integrated and coordinated

⁴³² Qtd. by Crowther, p. 210

⁴³³ Ibid.

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remains underappreciated throughout the world, including parts of Britain.

English Orthodox Technique actually remained remarkably unchanged throughout the transition to sliding seats, and in retrospect the reasons were actually quite simple.

Orthodox rowers on their bench seats had evolved to value two things above all else: length in the water, and the long, elegant swing of the upper body. Brickwood and Gulston proved that early sliding seats increased length in the water, but at the cost of around ten percent of body angle forward, as demonstrated in the historic photos on the previous page.

Sliding seats any longer than nine inches or so would even more significantly limit body swing forward because the further an oarsman slid on his seat, the higher his knees inevitably rose. The higher his knees rose, the less his body could swing forward before his chest and thighs came together, thus limiting more and more the signature Orthodox body reach forward, the foundation of the “handsome, long swing of fixed-seat rowing.”⁴³⁴

Orthodox followers were suspicious of any innovation which could compromise their imposing, graceful body swing.

Eton rowing historians **Byrne & Churchill**: “Slides were considered inelegant. They were dirty, and when no longer dirty they were noisy. Besides, the spectacle of eight pairs of knees rising simultaneously was to be deprecated.”⁴³⁵

In the following quote, pre-sliding seat English Orthodox Technique is described nostalgically from the post-sliding seat perspective of 1935: “Fixed seat rowing had by 1872 reached a high degree of perfection, its strong point being perhaps the free swing forward from the hips, which is said by eyewitnesses to have made the stroke almost

as long as it afterwards became on the slide.”⁴³⁶

For decades, in fact, “they thought of the slide as only an extension, however important, of fixed-seat rowing,”⁴³⁷ and it was standard practice to continue to teach novices on fixed benches.

The Lesson of the Sliding Seat

Change is by definition anathema to any and all forms of orthodoxy in human culture. One example of the difficulty that English Orthodoxy would eventually have in staying relevant and adapting to new challenges had already manifested itself as early as the 1870s with its resistance to the sliding seat.

According to **C.R.L. Fletcher**, under **Dr. Edmond Warre**,⁴³⁸ Eton College “won the Ladies’ Plate [at Henley] eight times, 1864, ‘6, ‘7, ‘8, ‘9, 1870, 1882, ‘4. There was thus a long gap, 1870-82, of failure, but it was during this period of defeat that the sliding seat first came to be used, and good conservative as he was, Warre found it difficult to pass this milestone.”⁴³⁹

Byrne & Churchill: “The earlier Eton crews are said to have rowed on four-inch or at the most six-inch slides, while their opponents were using eight-inch and later ten-inch, and by 1880 or sooner the malady of formalism, which occasionally attacks all the better types of rowing, began, causing the rejection of those whose backs were not straight by nature. A very sharp finish, combined with the short slide already mentioned, resulted in a short, fast stroke, fatal to any but the very best crews, and likely to be disastrous even for them.”⁴⁴⁰

⁴³⁴ Mendenhall, p. 10

⁴³⁵ Byrne & Churchill, p. 216

⁴³⁶ Ibid.

⁴³⁷ *Fairbairn On Rowing*, p. 23

⁴³⁸ See Chapter 16.

⁴³⁹ Fletcher, p. 278

⁴⁴⁰ Byrne & Churchill, pp. 182-3

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In 1889, there was another example of resistance to change. Eton student Captain of the Boats **E.L. Churchill**, future co-author with L.S.R. Byrne of the definitive history of early Eton rowing, ordered a new shell with long slides, but when Stuart Donaldson, Warre's immediate successor as Eton coach, found out, he threatened to quit.

The boys had to back down.⁴⁴¹

The Need for Uniformity

Despite English Orthodox resistance, sliding seats had arrived. The first unintended consequence of the sliding seat was to change the **morphology of the ideal oarsman**. According to Crowther: "In the days of the fixed seat, when the power of the stroke came from the shoulders and the arms, the oarsman was apt to be a great, broad-chested fellow, but with the slide, the stroke had so many changes and called for so much more activity and general development that the long, lithe man came into favor, and the best crews since have been made up from that type."⁴⁴²

In addition, anyone who has ever rowed in a boat larger than a single can understand that, in order to avoid utter chaos, crews rowing on sliding seats require close coordination between boatmates. In 1870, sliding seat inventor **John C. Babcock** described a second unintended consequence of his invention: "The slide properly used is a decided advantage and gain of speed, and the only objection to its use is its almost impracticable requirement of *skill and unison in a crew*, rather than any defect in its mechanical theory. [my emphasis]"⁴⁴³

A unified approach for the crew had become essential, and normally this can be

accomplished in one of two ways. It can be done informally, subconsciously, through mileage, months of practice together tending to "smooth off the rough edges," but this can be a slow, frustrating and inefficient process.

Or a particular solution can be imposed upon the crew by mutual consent *or* by someone in charge.

During the 19th Century and on down to the present, within the many boathouses along the Thames at Eton, the Isis at Oxford and on the banks of the Cam at Cambridge, a president or captain would be elected from among the student team members, and it would be his responsibility to organize the team, decide upon a technique, decide upon equipment, and either hire a coach or coach the crew himself from his seat within the boat.

Theoretically, each individual on a squad can be coached to conform to a chosen technique, but this is infinitely more challenging when the coaching is being done from inside the boat by a young man with a limited mandate, minimal experience and little guarantee of continuity from year to year. Not everyone given such a responsibility turned out to be a T.S. Egan or an A.T.W. Shadwell.

The presidential system made the direction of the team subject to the vagaries of politics and individual idiosyncrasy, which even Tom Egan experienced at Cambridge in 1847.⁴⁴⁴ A course set by one successful president might indeed hold sway for several years and even several successors, but especially after a couple of setbacks in the Boat Race or the Mays Bumps, opposition would inevitably arise, and eventually a vote would swing the pendulum in some other direction, with resulting hard feelings, recriminations and loss of momentum.

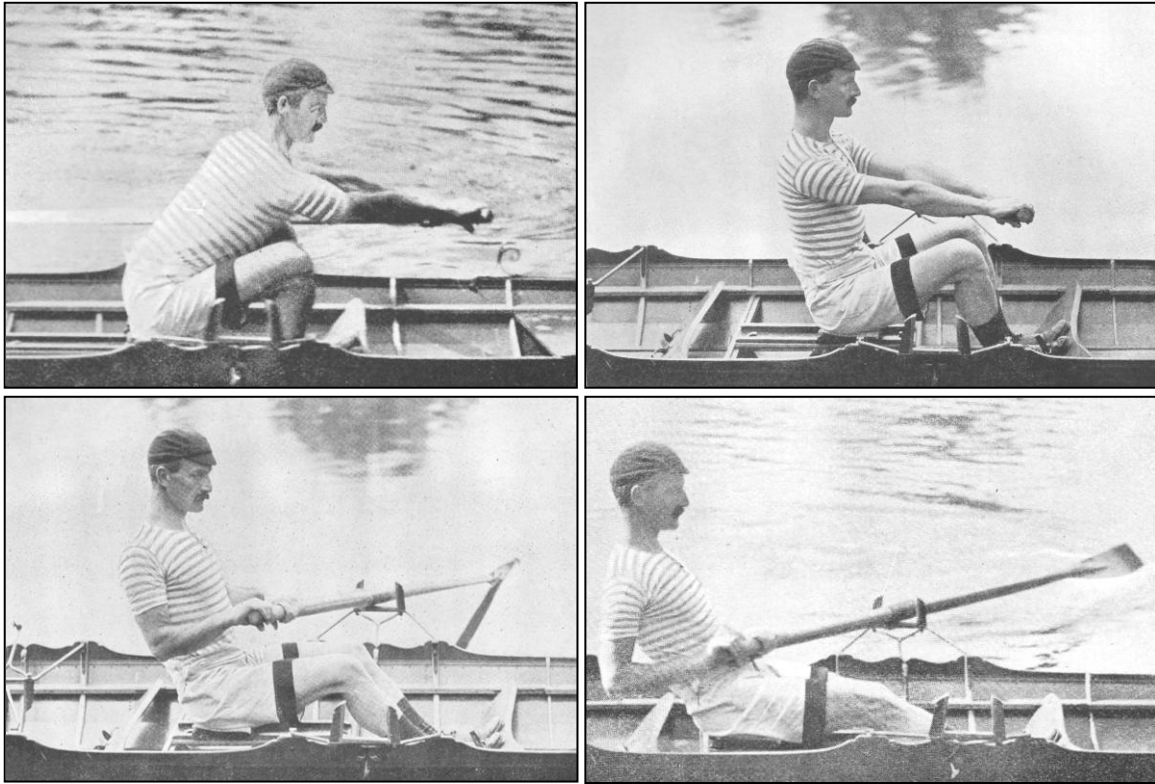
⁴⁴¹ Byrne & Churchill, p. 187

⁴⁴² Crowther, p. 233

⁴⁴³ www.rowinghistory.net/equipment.htm

⁴⁴⁴ See Chapter 6.

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Rowing, Isthmian Library

Post-Sliding-Seat English Orthodox Rowing

Back swing preceded the legs on the drive, with arms held straight until the second half of the pullthrough. The body swung through an arc from $+40^\circ$ forward of vertical to -35° past vertical. Legs, back and arms together finished the pullthrough.

A skilled and experienced permanent coach could have provided continuity (and objectivity), but professional coaches had been banned, and that was the situation in the English Orthodox rowing community when sliding seats were introduced and uniform technique suddenly became that much more essential.

Instead, “in the early years of the slide, the methods of using it must have been of rather an experimental order.”⁴⁴⁵

Presumably, evolutionary progress is more efficient in an environment where each generation metaphorically stands on the

shoulders of the previous one, where everyone profits from the experience of the generations which have preceded them.

That is the point of studying history.

Progress is made more or less effective depending upon the method of passing information intergenerationally.

Under these circumstances, it is not surprising that college crews in 19th Century England did not make quick progress in effectively integrating sliding seats into their fixed-seat English Orthodox Technique, and sliders also had to swim upstream against resistance to any change at all.

⁴⁴⁵ Rowe & Pitman, p. 55

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Coordination of Back and Legs

In fact, English Orthodoxy came to a general conclusion which subsequent history has revealed to be less than ideal.

When it came to driving the boat forward with the leg-drive starting *at the entry*, the conclusion at the universities was unanimously negative.

Bourne: “A crew rowing in good time and thrusting in this manner with the legs may kick their boat along at a considerable speed, but, powerful though it may be, the single group of muscles which has to bear nearly all the burden soon tires.”⁴⁴⁶

In the English Orthodox Technique of the 1870s, leg drive at the entry was to be avoided completely in favor of the same back swing that had been used in the pre-slide days. The practical result was the sequential use of back motion first followed by leg motion (and then arm motion).

Brickwood: “One word of caution to a coach will be sufficient. It is, ‘Don’t tell your men to kick their stretchers or to row with their legs.’

“He should spring back, like a bow when the string is loosed, and bring the muscles of his back and legs into play, at the same time raising his weight off the seat – thus using his whole strength and weight at once and together.

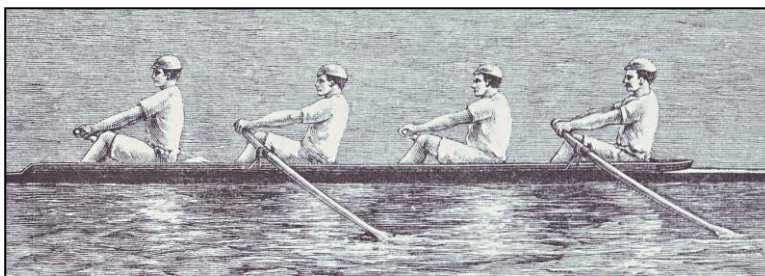
“Tell them to lift their bodies so that the weight rests on the handles of the oars and on the stretchers. Tell them that while rowing the stroke through the water, they ought to be able to sit on an egg without breaking it, but don’t tell them to kick.”⁴⁴⁷

With the advantage of hindsight, the conclusion to avoid leg drive in the first half of the pullthrough appears to have been inevitable since English Orthodoxy of the period was built on a foundation of **sequential use** of different muscle groups, backs first, then arms. Accordingly, it was perceived that a crew *had to make a choice* between assertive legs at the entry or elegant Orthodox back swing at the entry, a technique which had proven effective over the course of four decades.

The conservative British rowing community opted for the status quo. Assertive legs at the entry were rejected out of hand throughout Orthodox England.

Bourne: “This evil was recognized at the Universities soon after the introduction of sliding seats, and a remedy was sought by teaching oarsmen to fix their knees at the beginning of the stroke and to lift their bodies up to and even past the perpendicular, as if on a fixed seat.”⁴⁴⁸

The only problem was **knee clearance**.



Woodgate

Back motion before legs led to the challenge of **clearing the knees**.

Woodgate: “The knees have been elevated by the slide to a height over which the oar-handle cannot pass without being elevated in its turn. Therefore, having once made a catch with rigid knees, the [athlete] should then begin to slide contemporaneously with his swing for a small distance until he has brought his knees to such a level

⁴⁴⁶ Bourne, *Textbook*, p. 134

⁴⁴⁷ Brickwood, pp. 26-8

⁴⁴⁸ Bourne, *Textbook*, p. 134

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that the oar-loom can pass over them. During this period of the stroke, he should slide only just so much as is required in order to bring his knees to the necessary height before the oar reaches them.⁴⁴⁹

This sequential usage of backs first, *then* legs, *then* arms seems to violate the **Summation of Segment Velocities** principle of biomechanics, which would require the strongest muscles, namely the

legs, to be used first, then the backs, then the arms. But Orthodox adherents initially failed to appreciate the potential of the legs.

No wonder that sliding-seat crews initially went no faster than fixed-seat crews had!

So it was left to another generation to exploit the opportunity to take full advantage of leg-drive during the rowing stroke.

⁴⁴⁹ Woodgate, p. 113