

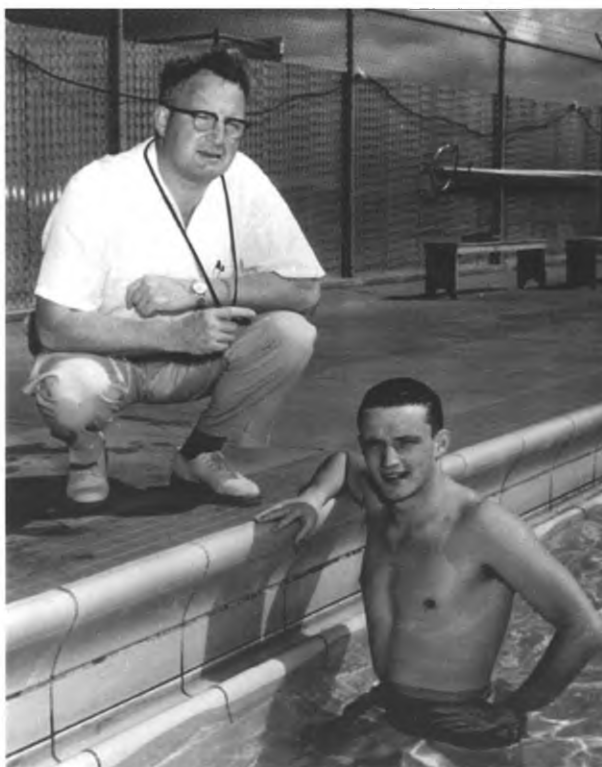
A LONG NIGHT'S JOURNEY INTO DAY

The Odyssey of Butterfly*

David E. Barney & Robert K. Barney

Twisted literary allusions aside, and with apologies to Eugene O'Neill, the evolution of competitive swimming's most flamboyant stroke took much longer to reach a conclusion than did Odysseus's homeward-bound wanderings recited by Homer in the *Odyssey* so many centuries ago. Indeed, in the minds of many, and especially in the consciousness of the butterfly stroke's principle advocate, the journey featured as many pitfalls and perils in the turbulent seas of the international swimming world as Odysseus might have encountered on the storm-tossed waters of the Aegean and Ionian Seas on his homeward voyage to Ithaca. In reality, from beginning to end, it took almost a quarter of a century for butterfly to gain membership in what heretofore had been only a trio of firmly established competitive strokes. From origin to emergence as an autonomous stroke, butterfly's evolution was marked by measures of xenophobia, controversy, frustration, angst, argument, and gnashing of teeth, not to mention other disorders, most of them having to do with conflicting semantic interpretations of various rules books. Like Homer's *Odyssey* of old, the butterfly's evolution was also peopled by personalities, some well-known, some less-known, but each a significant player in the evolutionary drama of competitive swimming. It is the purpose of this investigation to examine this interminably "long night's journey into day," if you will, and why it took so long for the butterfly stroke, as we know it today, to nudge its country breaststroke cousin aside and ultimately emerge autonomously as swimming's fourth and final, and perhaps most exciting, competitive stroke.

But rather than start at the beginning with the genesis of the stroke, we would like to commence at its culmination, at least in an Olympic sense, and then work



Charles Red Silvia and Bill Yorzyk (Barney archives)

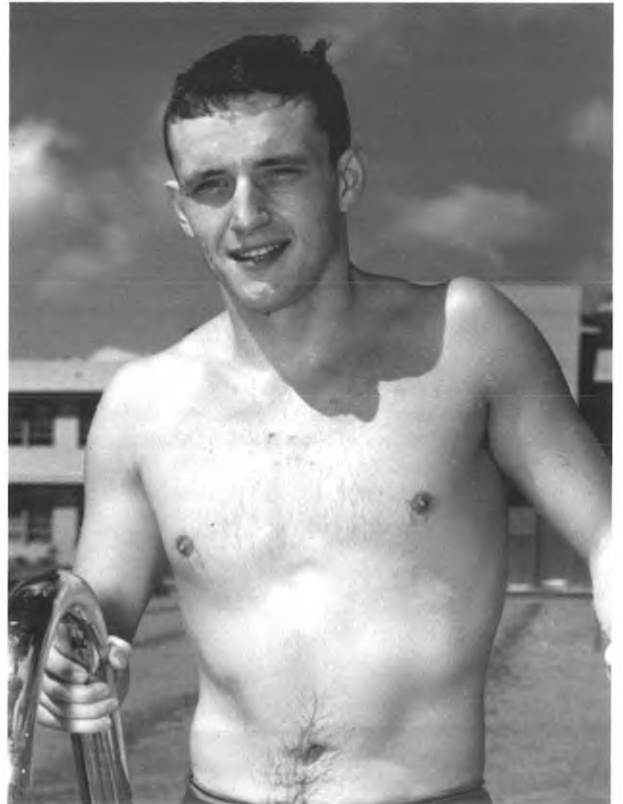
backwards and then forward again, not an entirely inappropriate approach, come to think of it, for an examination of the tangled "on again-off again" history of the butterfly stroke.

Referring initially to an ending or culmination that took place fifty years ago might appear odd, but in the historical perspective of competitive swimming, half

a century might pass for, say, the equivalent of a light year. The time is 1956, early December, a time of year when the last vestiges of spring begin to collapse into summer “Down Under.” The place is the Olympic Park Swimming stadium at the Games of the XVI Olympiad in Melbourne, Australia. Two moments: the 200 meters butterfly final for men, and then, a few days later, the 100 meters butterfly final for women. The principles: William Yorzyk and Shelley Mann, both of the United States. They would become the very first gold medalists in history’s first Olympic butterfly event.

William Yorzyk

Bill Yorzyk’s appearance in the final of the 200 meters Butterfly, not to mention his inclusion on the 1956 American Olympic team itself, is one of the more wondrous stories in sport. At the age of sixteen, six years before the Games of the XVI Olympiad, he enrolled in Springfield College in Massachusetts, an institution that traditionally tested all incoming freshmen for swimming capability. Since he could hardly swim at all, Yorzyk was declared “a water-risk” by the college. That ironic classification, as well as his failure to make the football team, quickly led him to the pool where he began to practice in an effort to pass Springfield’s swimming requirement.¹ While honing his beginner skills in Springfield’s cramped 20-yards pool at the McCurdy Natatorium in the Pratt Gymnasium, he caught the eye of legendary Springfield swim coach Charles “Red” Silvia. As it so often happens in the eye of a great swim coach, Silvia saw something promising in Yorzyk, who was, for all intents and purposes, a beginning-swimmer. The promise, obviously, lay not in Yorzyk’s skills but rather in his drive, endurance, and perseverance, three characteristics, by the way, that enabled him, in time, to survive 20,000-yard workouts in the McCurdy pool, yardage that was unheard of in that day. As Yorzyk recalls, “I lived at the pool, swam between classes, and became totally waterlogged.”² Under Silvia’s guidance, Yorzyk directed his less than modest ability toward a quest that eventually would mark him as one of the nation’s truly best swimmers. He began his journey in modest fashion, barely winning his Freshman Numerals in swimming.³ From then on, his competitive swimming career was meteoric. By the end of his junior year he improved enough to gain NCAA (National Collegiate Athletic Association) All-America status in both the 1500 and 440 yards free-style events. In his senior year he was co-captain of the Springfield team as well as a repeat All-America status in the 1500 and 440 Freestyle. In addition, and most auspiciously, he also achieved All-America in the 200 yards Breaststroke. He, like most other breaststrokers of that day, used the hybrid butterfly-breaststroke technique. That aside, however, his venture into the breaststroke event landed him smack-dab in the middle of the butterfly-breaststroke revolution that was occurring at that time. Following the 1954 NCAA Championship Meet, he



Bill Yorzyk (Barney archives)

and “Red” Silvia journeyed to Yale for the 1954 National AAU (Amateur Athletic Union of the United States) Indoor Swimming Championships. There, in the Payne-Whitney Gymnasium’s competition pool, he observed for the first time a swimmer using the dolphin butterfly stroke. That swimmer was Buddy Baarcke. “As soon as I saw [Baarcke’s] swim I knew I could swim that stroke,” recalls Yorzyk. “We came home from Yale and started work on the fly. It came easily for me, and we were off and away. ‘Red’ had me swim in every water carnival he could find, and I ended up with a total of 23 American records at all distances.”⁴ In addition to becoming one of the earliest practitioners of the dolphin butterfly stroke as we know it today, Yorzyk was also the first to use, exclusively, the every-other-stroke breathing cycle, as well as a much longer and flatter stroke that eventually put an end to the early dominance of those swimmers, called undulators, who advocated an accentuated undulating and thus vertical style of stroke. All in all, it can be said that under Silvia’s tutelage, he achieved not only multiple world and American records, but, as well, the epitome distinction in swimming, Olympic Gold. And, it is worthwhile to note that, together, Yorzyk and Silvia produced the sport of swimming’s first teaching film on the mechanics of dolphin butterfly. And finally, the echo we would like to leave you with here is that Silvia’s influence, both in the pool as well as in life, led William Yorzyk, not only to international swimming fame and top-rank Olympian status, but to a distinguished career as a doctor of medicine as well.

Shelly Mann

If Yorzyk's story is compelling, then Shelly Mann's is equally so. Long before Mann led an American sweep of the medals in the 100 meters butterfly event for women at the Melbourne Games, she had to conquer a much more formidable foe. Stricken by polio at the age of six, she suffered through a paralytic childhood that lingered always on the ominous edge of whispers of legs freezing and encasement in iron lungs, while waiting for life to return to her legs. At the age of ten, following four years of therapy, including routine regimens of both passive and active water therapy, she regained the use of her legs. She did not learn to swim, however, until she was eleven years old. By the time she was twelve she began to swim competitively. Two years later at the age of fourteen, she became a national champion, and a year later than that, a multi world record holder. She was nineteen when she won the gold medal in the 100 meters Butterfly at Melbourne. Her training leading up to the Olympics was almost "déjà vu all over again," as Yogi Berra frequently reminds us. While a student at American University in Washington, D.C., she joined the Walter Reed Swim Club and trained in much the same environmental circumstances that had dictated her polio therapy years earlier. The tepid water of the hospital's restorative therapy pool was hardly an ideal venue in which to train for international competition, but Mann persevered to become one of the brightest stars in the noteworthy galaxy of American women swimmers in the early and middle 1950s. But it was a singular moment at the 1956 U.S. Olympic Trials at the Brennan Pools in Detroit, Michigan that transformed her awkward hybrid butterfly-breaststroke technique into the newer, more efficient butterfly-dolphin stroke that would eventually place her on the victory podium in Melbourne. That singular moment came courtesy of Bill Yorzyk and "Red" Silvia. Using Yorzyk as a demonstrator, Silvia tutored Mann in the new stroke. It was slow going at first. Yorzyk's recollection is that Mann had some difficulty shaking loose from the restrictions of the hybrid butterfly-breaststroke and grasping the rhythm of the two kicks per arm cycle that Silvia had taught him over time.⁵

Yorzyk's and Mann's butterfly victories were the only gold medals American swimmers won in Melbourne, and while they did not generate an abundance of coverage in either the American or Australian press, they did manage to achieve considerable notice in international swimming circles. Each, of course, established a starting place for Olympic records in the butterfly event. The following Olympic Games would illustrate how quickly speed and efficiency in the stroke evolved, especially in the men's 200 meters event, as demonstrated by Mike Troy's 1960 world and Olympic record swim of 2:12.8 in Rome. By 1964, the world record had been lowered by an additional six seconds, and by 1972, Mark Spitz was flirting with the magic two-minute barrier. We all know where it stands today, half a century post-Yorzyk. For the record, 1:53.93, almost 23 seconds faster than Yorzyk's 1956

world mark of 2:16.7. Twenty-three seconds in fifty years doesn't seem like a lot of time, accentuating, it seems to us, an appreciation for not only the excellence, but the significance, as well, of Yorzyk's beginning standard.

Into the Night: The Odyssey Begins

Well, that's a quick look at the tip of the ice-berg. Let's examine the bulk of the berg, the part, or in this particular case, the two distinctive parts of the butterfly stroke, one part that embraced one's view above the surface of the water, and the other that lurked not only beneath the surface, but in the scrambled text of the rules books as well. Coaches, swimmers, and swimming aficionados, possessing a sense of history especially, are well aware that the butterfly arm stroke evolved from the breaststroke, at least in part, we hasten to add. Most, however, are not aware of the exact progression of the two components of the stroke that eventually combined to make up the signature movements of the stroke we recognize today. And because there are two components, each with a different genesis, and each evolving at different times, it would be best, we think, to deal with each separately before finally merging them into the fluid, efficient, speed-grafted stroke we know today here in the early 21st century.

Flying Fish, Flying Finish, and Finally, Flying Breaststroke

The over-the-water arm recovery stroke, called initially the "flying fish,"⁶ first began to appear in breaststroke swimming near the middle of the 1920's, a decade of athletic endeavor historically referred to as "The Golden Age of Sport." It was not, however, the golden age of swimming. Johnny Weismuller's presence aside, the rules were often couched in ambiguous semantics, thus offering swimmers ample opportunity to employ measures of both interpretation and gamesmanship. The exact genesis of the over-the-water arm recovery is not known, but there are references in the literature to breaststroke swimmers, one in particular, who exploited a vulnerable moment in the rules by using a "flying breaststroke turn," and then, a short time later, a "flying finish" in breaststroke races.⁷ The vulnerability in the breaststroke rules centered on the interpretation of a singular word in the language governing the recovery phase of the stroke as expressed in both the pre-1935 FINA (Fédération Internationale de Natation Amateur) and NCAA (National Collegiate Athletic Association) rules for swimming breaststroke. The common rule, prior to 1935, stated that the arms had to be simultaneously *pushed forward* on recovery. The language never addressed through what or which plane the arms had to be pushed forward. Keep that thought clearly in mind as we attempt to untangle the somewhat muddled genesis of the over-the-water arm recovery technique.

What few references there are to initial use of the "flying breaststroke turn" refer to German breaststroker

Erich Rademacher, who reigned through much of the decade of the 1920s as the world record holder for the event. Despite his supremacy in the stroke, Rademacher was denied participation in Olympic competition at the Olympic Games of both 1920 and 1924. Germany, of course, was banned from participating in those Games for its role as the perceived perpetrator of World War I. Despite those limitations, Rademacher was able to establish, re-establish, and, in effect, lay consistent claim to the world breaststroke record during most of the decade of the 1920s. By the time he arrived in the Netherlands as a heavy favorite to win the gold medal in the breaststroke event of Amsterdam's 1928 Olympic Games, he had lowered his world record to 2:48.0. There, the tall, mesomorphic Rademacher was upset by Japan's Yuoshiyuki Tsuruta.⁸ There is no evidence to certify that Rademacher used "flying breaststroke" turns in his silver medal swim against Tsuruta. One creditable source⁹ states assertively that he did not, suggesting perhaps that Rademacher didn't want to flirt with possible disqualification, as there was still plenty of controversy regarding the legality of the technique. Tsuruta's victory, Japan's only gold medal swim in the Games, by the way, would foreshadow a Japanese team performance that would clearly dominate Olympic swimming four years later at the 1932 Games in Los Angeles. Footnoting all this is the fact that, in the end, Rademacher did gain some measure of satisfaction at Amsterdam; he was the stand-out goal-keeper of Germany's gold medal water polo team.

In 1926, two years before the 1928 Games, Rademacher made several appearances in the United



Erich Rademacher (Barney archives)

States, mostly in New England and New York, where his unorthodox style attracted both the notice and criticism of American breaststrokers and the press alike. He was the kind of swimmer who looked for loopholes or blind spots in the rules for improving time and therefore his world record accomplishments. He was not, for instance, above using a subtle scissors kick in the middle of the pool in some races, especially those that were not tightly officiated. He became clever at it; so much so, in fact, that he was never disqualified, probably, in part, because he was the world record holder at that point in time.¹⁰ And because he was the world record holder, perhaps European favor and influence turned a blind eye to his momentary use of the over-the-water arm recovery as well. While Rademacher's scissors kick was clearly in violation of the rules, the legality of his "flying breaststroke" turn appeared to boil down to an interpretation of the phrase "pushed forward." Rademacher's argument lay in the fact that once the pulling phase of the stroke had been completed the recovery phase could hardly be called anything but a push, whether it was done beneath or above the water in recovery, an argument that was ultimately put to rest several years later by an American rules initiative that changed the word *pushed* to *moved*.¹¹

Regardless of all that, the technique fascinated a small circle of American breaststrokers. One of them, perhaps the first American emulator of the "flying breaststroke" turn, was Walter Spence, the oldest of the famous swimming trio of Spence brothers from British Guiana, and the first brother ensemble ever enshrined in the International Swimming Hall of Fame (1967). Walter immigrated to the United States in 1923 at the age of 22 and immediately began training at the Brooklyn Central YMCA. He became an over-night sensation in the breaststroke and three-stroke medley (breaststroke, backstroke, and freestyle). By 1925, he was the holder of ten world records as well as several National AAU records. A decade later, at the "tender" age of 34, while swimming for Rutgers University, he became a three-time NCAA champion and the National Collegiate Record holder in the 100 yards freestyle with a time of 51.6, a record that endured for another decade until the indomitable Alan Ford of Yale, in 1944, took the record under 50 seconds flat for the first time in the history of the event when performed in a 25 yard pool.¹² The authors of these remarks, by the way, share one thing in common with Alan Ford, but it has nothing to do with their comparative 100 yards freestyle times; they all graduated from Balboa High School in the Panama Canal Zone, albeit a few years apart, but only a few, we might add.

The second of the Spence brothers, Wallace, six years younger than Walter, was a breaststroker *par excellence* himself. Joining Walter at the Brooklyn YMCA, where both trained and coached, Wallace became one of the finest breaststroke swimmers in the world as well as a leading exponent of the fly-away technique on turns and finishes.¹³ He also became a world-class backstroke



The Spence Brothers (Barney archives)

swimmer. Indeed, when younger brother Leonard joined Walter and Wallace in New York, together they formed the most powerful three-stroke medley relay team of that era. Wallace swam the backstroke, Leonard the breaststroke, and Walter the freestyle. If we were to examine the roots and subsequent metamorphosis of the individual medley and the medley relay, we would obligatorily begin with the saga of the Spence brothers. That footnote aside, between them, the Spence brothers dominated the breaststroke event for more than a decade. But it was a singular moment in 1933 at the Brooklyn YMCA that wrenched the “flying breaststroke” turn and finish away from its momentary use and put in place the idea of an extended over-the-water arm recovery breaststroke or butterfly-breaststroke, as it eventually came to be called. The light at the end of this particular tunnel, however, would take roughly twice the length of Odysseus’s decade long odyssey to reach.

Late in 1933, early December to be exact, at a time when everyone was trying to beat the Spence brothers, Henry Myers, a young, enterprising three-stroke medley swimmer from Brooklyn’s St. George Dragon Swim Club, reasoned that if the rules for swimming breaststroke invoked no penalty for *how* the arms were *pushed* forward on recovery and, in addition, officials were not penalizing breaststrokers for using the fly-away recovery on turns and finishes, then why couldn’t a swimmer extend the use of the over-the-water arm recovery for a longer period of time, for that matter, the entire duration of a breaststroke race, or in Myers’ particular case, the first leg (breaststroke) of a three-stroke medley event?

And, what better moment to pursue his inspiration than against Wallace Spence himself, the reigning national champion in the three-stroke medley. And, why not in Wallace’s home pool at the Brooklyn YMCA, to boot. In a letter Myers wrote in October 1940 to Yale University’s legendary swimming coach, Bob Kiphuth,¹⁴ Myers related how he had beaten Wallace Spence by more than ten feet in the opening breaststroke leg of a preliminary heat in the three-stroke medley, an event that would ultimately be called the individual medley. Myers employed a continuous over-the-water arm recovery throughout the breaststroke leg. Attesting to Myers’ performance were his coach, W.W. Robertson, along with Jack Mellon, manager of the St. George Hotel in Brooklyn where the Dragon Swim Club trained, and, most importantly, by Ed Kennedy, Columbia University’s swim coach and godfather to both NCAA and Interscholastic swimming during the 1920s and 1930s. Myers elaborated to Kiphuth how irate Wallace Spence became, claiming that Myers was swimming freestyle instead of breaststroke and, further, chastising him “to learn how to swim breaststroke properly.”¹⁵ Indeed, Spence withdrew in protest from the final of the event. Neither the spectators nor the officials knew what to make of this sudden turn of events. In the end, the officials conceded that the spirit of the rules aside, Myers’ innovation had the strict letter of the rules on his side. Myers, by the way, was deservedly proud of his “creation” and credited the innovation with saving breaststroke from extinction as a popular spectator race. “It [is] uninteresting to watch a breaststroke race,” he wrote to Kiphuth, “In time, the old breaststroke would have become as *passé* as the English sidestroke, as far as racing is concerned. A butterfly-breaststroke race is a very exciting race to watch. The splashing and violent arm-motion seems to be quite conducive to spectator enthusiasm.”¹⁶

In short order, Myers interested two teammates, Lester Kaplan and Paul Friesel, in the stroke and each of them began to use it in a number of 100 yards breaststroke races. Within a month, both had become familiar enough with the technique to make a try at breaking the existing world record of 1:06.8 for 100 yards of breaststroke, conventional or otherwise. The attempt took place in January 1934 at the City College of New York’s 20-yards pool, predecessor of the Jeremiah T. Mahoney pool in place today. Kaplan narrowly missed the record by swimming 1:07.4. Friesel was close behind. Both improved their personal best breaststroke times by more than three seconds by using the “fly-away” recovery exclusively.¹⁷ Word of Myers’ innovation, as well as Kaplan’s and Friesel’s success with the over-arm recovery technique, spread rapidly. Within a year, many of the leading breaststrokers in the world, including the Spence brothers, would use, either intermittently or exclusively, the fly-away recovery in breaststroke, and especially during the opening phase of what much later came to be called the individual medley.

The rapidly expanding use of the over-the-water arm recovery ultimately prompted the NCAA to change the word *pushed* in the breaststroke recovery rule (Rule IX) to the word *moved* in order to provide greater latitude in interpretation of the rule, accommodating, it would appear, the new and speedier arm recovery technique.¹⁸ European rules makers reluctantly embraced the new technique, a reluctance, by the way, that tended to preview their subsequent and rigid two-decade refusal to tamper further with the oldest, most historical, and, by European standards at least, the stroke most cherished of all competitive strokes. Indeed, a few years later, they would turn a deaf ear to another proposed innovation, one that would have completely eradicated orthodox breaststroke as a competitive stroke. We will discuss that horrifying and controversial proposal, at least to Europeans, shortly.

So far as the rules books were concerned, the wording of the breaststroke rule remained relatively static up to and including the early part of the decade of the 1950s. For more than two decades, then, there simply was no reference to *in what manner or through what plane* the arms had to be *moved* simultaneously forward on recovery. The irony, of course, is that the whole issue of over-the-water arm recovery appeared to balance on a singular word that took more than seven years of debate to ultimately and officially alter the rules for swimming breaststroke. In retrospect, the *pushed* versus *moved* factor in the breaststroke recovery rule became a critical moment so far as the development of at least half of the butterfly stroke is concerned.

And, so, we come to the end of the genesis of the over-the-water, fly-away, so-called butterfly-breaststroke, which leads us to John Herbert Higgins. Following a decade of gold medal 200 meter breaststroke dominance by the Spence brothers (Walter from 1925-29, Wallace in 1930, and Leonard from 1931-35), at the 1936 National AAU Indoor Swimming Championships, performances, for the most part featuring the over-the-water arm recovery stroke on the turns and at the finish, Johnny Higgins, a young swimmer from the Olneyville Boys Club in Providence, Rhode Island, wrested the AAU title away from Leonard Spence, who unknowingly at that time was suffering from tuberculosis and would be hospitalized in a sanitarium within a year of his showdown with Higgins. Higgins' contribution to the evolution of the stroke was rooted in his physical ability to swim the 100-meters breaststroke and, later, the 200 meters breaststroke with the over-the-water arm recovery from start to finish. Indeed, in February 1936 he became the first breaststroker ever to set a world record using exclusively the over-the-water arm recovery in what later came to be called the Butterfly-Breaststroke. His time was 1:10.8 for 100 meters.

Several months later at the 1936 U.S. Olympic Trials, held at the friendly and familiar confines of the Rocky Point Pool in his hometown of Providence, Rhode Island,

Higgins established a new American and world record of 2:44.1 for the 200-meters breaststroke. A month later than that while intermittently employing both a conventional and butterfly arm stroke, he finished fourth in the finals of the 200 meters breaststroke at the Berlin Olympics.¹⁹ He can be seen at various moments in Leni Reifenstahl's historic film documentary, *Olympia*, "flying away" in an outside lane, well behind Japan's gold medalist, Tetsuo Hamuro, who swam to victory using the orthodox style of breaststroke.²⁰

In the evolutionary rear view mirror of the stroke, then, progressively featuring over-the-water arm recoveries on turns, then finishes, then ultimately for an entire breaststroke race, from all of that, rose the idea or notion, at least, of what would eventually evolve into a new and exciting event called Butterfly. Seemingly, only the dolphin kick was missing. In truth, the dolphin kick wasn't missing at all. It was alive and well and undergoing experimentation at the University of Iowa pool, but that's Part II of this story, a segment in the saga of butterfly that would take much longer to gain acceptance than the relatively shorter historical scenario of the over-the-water arm recovery. In total, official acceptance of an autonomous butterfly stroke would take almost three decades, from its true genesis in the mid-1920s to its acceptance as an individual stroke more than a quarter of a century later. Between times, the odyssey of butterfly was fraught by storm and strife as the over-the-water arm recovery gradually nudged orthodox breaststroke arm recovery aside and, then, at a snail's pace, crept toward autonomy, not only as an individual stroke, but ultimately as part of the fabric of other events as well, namely the individual medley and, of course, the medley relay.

It is important to remember at this point, that at no time during the two-decade use of the butterfly-breaststroke style was the event ever really documented or referred to in the various rules books, as anything other than breaststroke, despite the 1956 revisionist machinations of the NCAA, which arbitrarily, it appears, removed all NCAA champions in the 200 yards breaststroke between the years 1935 and 1955 and placed them in what can only be described as a mythical 200 yards butterfly event for those years.²¹ We use the word "mythical" because butterfly was *never ever* listed as an event (Rule 1) in the *NCAA Swimming and Diving Guides* before 1955. Nor was it ever mentioned in the language pertaining to the rules for swimming breaststroke (Rule IX) before 1955. In addition, a close examination of the *Guides* from 1935 through 1955 reveals that the *Guides* never once listed a result for a butterfly event for any year preceding the 1955 Championship meet, nor did they list an All-America in a butterfly event before 1955.²² Indeed, the word *butterfly* never even appears in the *Guides* until 1955, where and when it was posed initially as part of the heading for the breaststroke rule (Rule IX).²³ As an aside, we think there's a case for holding the NCAA accountable for their arbitrary action for many reasons,

only a few of which we have mentioned here. But, for the moment at least, put that annoyance aside, and while you're at it, put the recovery phase of the butterfly stroke aside as well, because that hullabaloo really had little to do with either the origin or the originators of the kicking and integrating phases of the stroke. Those originators were David A. Armbruster and his swimmer-research-associate, Jack G. Sieg.

David A. Armbruster & Mister Sieg

David Armbruster was the head swimming coach at the University of Iowa for forty-two years (1916-1958).²⁴ As early as 1932 he had gained recognition as one of the swimming world's leading stroke innovators. He became, in short order, a guiding and steady hand on the tiller of both the NCAA Advisory Committee as well as its Rules Committee, on which he served for more than two decades. In 1938 he was elected president of the College Swim Coaches of America (CSCA). In addition to being one of America's most successful swimming coaches, he was a visionary, a man of intellect and insatiable curiosity, and an extraordinary scientist as well. To put things in a "Science of Coaching" perspective, it is important to know that in the first half of the 20th Century three of the leading so-called sports scientists in the country were swimming coaches: Armbruster at Iowa, Kiphuth at Yale, and T.K. Cureton at Springfield College. They would be succeeded by a series of "latter day" scientific saints, among them a disciple of Armbruster's, former Iowa graduate student James "Doc" Counsilman, who would become not only a legendary swim coach at the University of Indiana and a United States Olympic Team swimming coach (1964/Tokyo and 1976/Montreal), but also the leading voice in the science of swimming in the second half of the 20th Century. Two others of note were the previously mentioned Charles "Red" Silvia at Springfield College and, later, Ernie Maglisco, both clinical types of coaches, who advocated a bio-kinetic approach to coaching technique. Silvia's work with the eventual 1956 Olympic butterfly champion, Bill Yorzyk, and their collaborative production of the first teaching film on the "new butterfly," as well as Counsilman's and Maglisco's books on the bio-mechanics of swimming,²⁵ made giant contributions to the sport of swimming.

But if Armbruster influenced Counsilman, who himself influenced numerous others, including many in this very room, then who mentored Armbruster? It was perhaps providential that much of Armbruster's tenure at Iowa coincided with the towering presence of one of the world's leading 20th century exercise scientists, Professor Charles H. McCloy.²⁶ McCloy's specialty was the analysis of motor movement, an area of scientific observation that did more than merely pique Armbruster's curiosity. Inspired by McCloy, and the systematic methodology of scientific analysis, Armbruster's work has provided us with some of the most important insights into the science of swimming.

Whereas Charles McCloy's primary laboratories were the gymnasium, the track, and the athletic field, Armbruster's laboratory was, of course, the swimming pool. His fundamental instrument of measurement became, in time, the movie camera. As early as 1928, a date which marked the beginning of his twenty-year study of "The Science of Swimming," Armbruster was filming his swimmers on top as well as below the water.²⁷ In this particular pursuit, he was guided in part by the Japanese, who also used underwater photography to diagnose stroke mechanics, a technique that led ultimately to Japan's nearly complete domination of the men's swimming events at the 1932 Olympic Games in Los Angeles, including, we might add, both a gold and silver medal finish in the 200 meters breaststroke.²⁸

Insight, innovation, and the never-ending pursuit of increasing mechanical efficiency, became the cornerstones of Armbruster's experimental research and the resultant contributions to the way we swim and, yes, the rules we swim by. When the over-the-water arm recovery in breaststroke began to evolve, Armbruster was drawn to the "fly-away" technique as an obvious way to lower time in the awkward breaststroke. And while he tinkered with streamlining the underwater pull phase of the stroke, his primary contribution to the evolution of the stroke related to the kicking phase and, eventually, the coordination of a completely revolutionary kick with the over-the-water arm recovery stroke.

"Kissing the Boys Goodbye"

There was a popular saying in the 1930s in reference



David Armbruster (Barney archives)

to speed and the part it played in athletic performance. American sportswriters were fond of writing, and the public became equally fond of saying, “kiss the boys goodbye,” when it came time to rhapsodize about the speed of two of the decade’s, perhaps even the century’s, most sensational speedsters. The first was Seabiscuit, the unlikely but legendary California racehorse and darling of the racing set from coast to coast, whose bursts of speed set him apart from most of the great race horses of that era, indeed, of racing history in general. Seabiscuit’s sudden surge down the stretch of arguably “the greatest horse race ever,” against War Admiral at Pimlico in 1939, perhaps best personified the popular saying of the day. The other speedster was Jesse Owens, the wondrous “Buckeye Bullet” from Ohio State University, whose exploits both at OSU and at the 1936 Berlin Olympic Games remain legendary even today. In that dark decade of the 1930s, the American sporting public needed heroes to soften their sorrows and, more often than not, speed became the common factor in the adoration of sport personalities who personified quickness best.

The dawn of the Depression found Armbruster engaged with the early component parts of his career-long study on the “Science of Swimming.”²⁹ The cornerstone of his scientific philosophy was to improve speed in swimming. Speed was what mattered most in his experimentations with stroke mechanics. He reasoned early on that increases in speed could most effectively be achieved by overcoming, by degree, the various obstacles that the nature of the sport presented to its participants, namely, the density of water, the bulky shape of the human body and its abducted appendages moving against the resistance of water, and the turbulence that body movement of any kind generated in water. What we might call today “streamlining,” became the thrust of his

experimentations with mechanics and especially so with breaststroke, since it was the slowest and most unnatural stroke and thus the most bio-kinetically unsound of the three competitive strokes. In short, he was looking for a way to “kiss the boys goodbye” in breaststroke.

It was evident that the refinement of the so-called fly-away recovery had speeded up the stroke significantly, but its lack of timing or synchronization with the unwieldy frog, or wedge, or whip, or round, or circle kick, as the orthodox breaststroke kick was called at one time or another, placed an acute physical demand on a swimmer’s endurance. This abbreviated domino effect



Jack Sieg flying (Barney archives)

acted in concert to impede the overall efficiency of the stroke. Clearly, the answer lay in the elimination or renovation of the retardant action of the orthodox breaststroke kick and the subsequent development of a kicking phase that would be more efficient, more powerful, and more harmonious with the fly-away recovery from a functional standpoint. In retrospect, the development of the new kick evolved much more quickly and with far less trauma than did Armbruster’s twenty year crusade to influence the rules and rules makers towards nullifying the orthodox breaststroke kick completely and replacing it with a new and speedier kicking action.

All that aside, experimentation with a “new kick” began with the arrival of Jack Sieg at the University of Iowa in the fall of 1932. Sieg was a journeyman sprint freestyler at best. In fact, his competitive career at Iowa was marked mostly by relay swimming, which, by the way, culminated with his anchor leg on Iowa’s national champion 400 Freestyle Relay at the 1936 NCAA Championship meet at Yale University. That golden moment aside, Sieg’s most significant value to Iowa, to Armbruster, and to the science of swimming, as it turned

Distance*	Fish-tail kick	Regular breaststroke kick
40 yards	0:21.3	0:23.5
100 yards	1:04.1	1:09.0
200 yards	2:29.0	2:37.0

Jack Sieg’s Speed Time Trials

*The speed trial times above were made in Iowas’s 20 yards pool

out, lay not in sprint freestyle but rather his playful fetish for underwater fish-tail kicking around the Iowa pool.³⁰ Sieg's fish-tail kicking was done initially as a lark, on his side, in an imitation of a fish. But the movement neither escaped Armbruster's notice nor, most importantly, his memory of an encounter he had experienced twenty years earlier with perhaps the Century's first swimming guru, the esteemed Canadian, George Corsan, Senior.

Meet Mr. Corsan: Godfather, Guru, Giant, and Genius

George Corsan proved over the first 25 years of the 20th century to be the single most important person to popularize swimming in North America. His treatise, *At Home in the Water*, published in 1910,³¹ was one of the earliest book-length publications in our literature on swimming. In addition, in his role as "Professorial Aquatic Consultant" to many American colleges of Physical Education, he became a mentor to some of America's leading intercollegiate swim coaches in the first-half Century, chief among them Bob Kiphuth of Yale, Matt Mann of Michigan, T.K. Cureton at Springfield College, Mike Peppe at Ohio State, and David Armbruster at Iowa.

Corsan was first and foremost an instructor of stroke. Although he was known for his career-long affiliation with the YMCA and scouting movements, both in Canada and the United States, he was also instrumental in the development of swimming programs featuring the implementation of mass instruction techniques for troops in World War I training camps. The legacy of his contributions to the sport includes his expertise and interest in natatorium design, mass methods of swimming instruction, the implementation of drills designed to eliminate fear-of-water, as well as teaching techniques that taught beginners the crawl stroke initially rather than the cumbersome and difficult-to-coordinate breaststroke. Over the first quarter of the 20th century, Corsan's numerous articles and books, and countless lectures and clinics, generated for him world-wide recognition as well as universal acceptance of his theory and practice of swimming instruction. Beyond the currency and legend of all that, is his signature work, *The Diving & Swimming Book*, published in 1924, a volume that remains a valuable resource for teachers and coaches even today.³² The International Swimming Hall of Fame honored Canada's George Corsan Sr.'s life-long contribution to the sport of swimming by inducting him into ISHOF in 1971.

Armbruster's chance meeting with the ubiquitous Corsan at a swim carnival in Toronto in 1911, led not only to a discussion of what Corsan at the time called the "fish-tail kick" but a demonstration of it by Corsan as well.³³ And so it was, perhaps, at that precise moment in time that the seeds of dolphin kicking were sown in Armbruster's mind, even if they did take more than twenty years to flower. Of course, there was no thought or talk of butterfly in 1911, or in 1921, or in 1931 or even

in 1941, for that matter. Both Corsan, initially, and later, Armbruster, envisioned the idea of the fish-tail kick as a possible alternative to the four and six beat freestyle "flutter kick" that was popularized and refined in the opening two decades of the century by Charles Daniels and Duke Kanhanamoku, and, in the 1920s, by the inimitable Johnny Weissmuller. In light of that alternative kick idea, however, it's interesting to note here that almost a century later, the fish-tail kick, later called the dolphin kick, has become a standard underwater kicking technique for both freestyle and backstroke swimmers during the under water glide phase of both starts and turns. That genesis aside, however, more than half a century would pass before the dolphin kick would gain exclusivity as the only kick that the rules allowed when swimming butterfly.

Armbruster's conversation with Corsan in 1911 regarding the fish-tail kick lay fallow for more than two decades in the inner sanctum of Armbruster's mind as he busied himself with the challenges of building a program at Iowa and launching his scientific studies on swimming. Early in 1933, however, he began to focus on the development of Sieg's "fish-tail" kick as a possible alternative to the unwieldy orthodox kick in breaststroke. The first step was to position Sieg's fish-tail kick on the breast, since the rules specifically forbid any lateral tilt of the body. Secondly, he began to experiment with various kicking patterns, all of which were filmed both on top as well as under the water. Initially, one and three beat kicks were tried, but were eventually discarded in favor of a two-kick repetition to each arm stroke and accompanying recovery. Everything became dependent upon rhythm rather than "streamlining" at this point in time. The "streamlining" came later. Sieg's progress under Armbruster's tutelage was steady and proved promising. His feedback to Armbruster on the ease or lack thereof of movement was critical to the stroke's development; their work together became incessant. Experiment after experiment, photo session after photo session, time-trial after time-trial resulted in Sieg shaving whole seconds of time over distances of 40 to 200 yards. An excerpt from the original edition of Armbruster's book, *Swimming & Diving*, provides us with a narrow but graphic view of his work with Sieg:

In the historical breaststroke kick, one unit of force is exerted intermittently, while in the Dolphin (fish-tail) kick, force is being exerted continuously, with no lost efficiency of effort or movement in relation to propelling force. The kick is [in effect] streamlining the legs in the breast stroke kick. The result of this kick is amazing and [generates] tremendous speed. A comparison of the times recorded over various distances substantiates the above statement. The speed trials were made by Jack Sieg, the co-originator of this kick.³⁴

1934 to 1937: The Dolphin Breaststroke Scenario

It is important to note that Armbruster's early references to the new kick almost always referred to it as the "fish-tail" kick, but by 1934 he began to identify it, in both conversation and research notes, as the "dolphin breaststroke kick." There was absolutely no mention of a "dolphin butterfly kick" at this particular point in time. And therein, it appears to us, from this rather smug view called hindsight, lies the major obstacle to what could have been a much earlier acceptance of the dolphin butterfly as an autonomous and fourth competitive stroke. If Armbruster had couched the dolphin kick in language introducing the idea of an entirely new competitive stroke, instead of attaching it to the idea of altering, yet once again, the historically-oriented breaststroke, we might have seen the introduction of what we know today as the butterfly stroke by the mid-1930s instead of almost 20 years later. Regardless, Armbruster embraced high hopes for the inclusion of the new kick in breaststroke swimming, which, he thought, "had the potential to surpass the backstroke in speed, thus becoming the second fastest of the competitive strokes."³⁵

While Armbruster hoped that the new dolphin breaststroke would ultimately catch on internationally, he aimed his initial efforts of acceptance, quite naturally, at his colleagues, the American college swimming coaches. In March 1935, at the NCAA Championship meet at Harvard University, Armbruster and other members of the NCAA Rules Committee gathered on the deck of the Harvard pool for an exhibition of, what Armbruster termed then, the Dolphin Breaststroke.³⁶ His demonstrator, of course, was Jack Sieg. The committee members were impressed with the demonstration but failed to agree on any alteration of the college rules to include yet another variation of swimming breaststroke. Undaunted, Armbruster continued to press the issue. The following month, April 1935, in a lengthy article in the *Journal of Health and Physical Education*, Armbruster enhanced his narrative with photographs featuring five silhouette drawings conceptualized from moving pictures of Sieg demonstrating different phases of the stroke.³⁷ It is an important document in framing the evolution of the butterfly stroke, despite the fact that its reference point is dolphin breaststroke and not dolphin butterfly. Armbruster's prosaic description and graphic depiction of the stroke demonstrated the posture of the dolphin breaststroke almost exactly as the dolphin butterfly stroke appears today:

This stroke may best be described as resembling the crawl stroke except that instead of recovering and pulling the arms alternately they are recovered and pulled through the water simultaneously. In the kick, similarly, instead of "fluttering" the legs up and down alternately, they are "fluttered" up and down simultaneously.³⁸

Armbruster understood that a schism existed between

the swimming progressivists from the United States and the traditionalists from abroad, particularly in Europe, so far as tinkering with the stroke and subsequently the international rules.³⁹ In his 1935 article, he prefaced his remarks with a statement of purpose: "Our purpose," he wrote, "is not to discard the old breast stroke [completely], [it still has use] as a utility stroke, but merely to offer this new type of stroke for exploitation as a competitive racing-speed stroke."⁴⁰ On the other side of that coin, of course, lay the Armbruster innuendo that orthodox breast stroke should be put to rest as a competitive stroke. That aside, and as it is with coaches who evolve into biomechanical scientists, Armbruster's intention here was to modify the breaststroke in such a way that it would simply become more efficient and thus, most importantly, faster. Speed was what he was after, and speed became the resultant focus of his devotion, energy, thinking, and innovation towards overhauling the most cumbersome and thus slowest stroke in competitive swimming.

Armbruster's 1935 article was followed two years later by another appeal to the NCAA swimming body in the form of an even lengthier article published in the "Educational Section" of the *1937 NCAA Swimming & Diving Guide*.⁴¹ That piece, entitled "The New Dolphin Breast Stroke on Trial," reiterated the case for renovating the breaststroke by calling for the legalization of the new dolphin breaststroke kick. To buttress his argument, Armbruster presented a series of views on how other competitive strokes, namely freestyle and backstroke, and even the English sidestroke, had evolved sensibly over time by trial and error. He argued that radical changes in the breaststroke had already occurred, changes that had resulted in significant increases in speed. Most of this speed, of course, was the result of the increasing popularity and subsequent use of the over-the-water arm recovery, and to a lesser extent, various and sundry attempts to shorten, or streamline, the ponderous conventional kick. He chided the International Rules Committee for their procrastination in responding to various requests for change. "Competitors want speed," he wrote, "and this stroke is the only one of the competitive strokes left that is not, so to speak, streamlined in its entirety."⁴² His premise was to articulate the renovation of the arm stroke with the dolphin kick, thus completely ridding the stroke of its awkward and resistant forward line of progress. Clearly, Armbruster had a vision, even if it did not include the idea or creation of an entirely new competitive stroke called butterfly.

So far as the "old" butterfly-breaststroke was concerned, it almost met its demise a year later in October 1938. Following an animated discussion, the FINA Executive Bureau "supported by four votes out of seven the banning of the fly-away arm recovery in the breaststroke event. However, since alterations to the technical rules required a two-thirds majority before adoption, the motion was declared not carried."⁴³ Thus, the seemingly

short, happy life of butterfly-breaststroke was allowed to limp on into the 1940s. At that October 1938 meeting, by the way, the FINA Bureau did manage to agree on something. Adding insult to Armbruster's injury, they unanimously resolved to make the definition of the breaststroke kick more precise by adding language to the rule that specifically *prohibited* up and down movements of the legs in the vertical plane, thus slamming the door shut in the face of his argument for a new "dolphin breaststroke" style. One wonders what the fate of conventional breaststroke would have been if FINA had passed on Armbruster's dolphin-breaststroke style. Would orthodox breaststroke have been retired as a competitive stroke, or would it have been instantly resuscitated in a purely conventional frame and thus complete the quartet of competitive strokes we have in place today? Given European influence and favor, the latter appears most likely. The scenario, then, that might have evolved in the late 1930s could have been a program of events that included not only the four strokes we have in place today, but the probable addition of a four-stroke individual medley and medley relay. But, alas, such competitive swimming scenery as that posture would take more than fifteen years to realize.

The "A" and "B" Strokes

Well, the traditionalists eventually won out, despite Armbruster's prodding and continued lobbying through the 1940s for change in the breaststroke rules to accommodate the dolphin kick. And so the "butterfly-breaststroke," as it became almost exclusively called, except in the rules books, fluttered and sputtered on through the 1940s. There is little doubt that the cancellation of two editions of the Olympic Summer Games (1940 and 1944) contributed to a general malaise or indifference, if you will, so far as addressing any international swimming rules reform was concerned. By the time the Olympic Games resumed in London in 1948, without the Japanese and Germans, all eight finalists in the 200 meters breaststroke employed the fly-away recovery with an orthodox breaststroke kick, a phenomenon that accelerated, however slow it might have been, the idea of separating the breaststroke into two events by the time of the 1952 Olympics in Helsinki: (1) an orthodox breaststroke event limited to an underwater recovery of the arms with a conventional breaststroke kick, and (2) a separate event called butterfly-breaststroke that would feature an over-the-water recovery of the arms with a conventional breaststroke kick, a style that most breaststrokers had been using for almost two decades anyway.⁴⁴ The latter would be a 100 meters event for women and a 200 meters event for men. Many coaches and rules makers from countries around the world, even some in Europe, favored the idea of separating the two strokes, but the chaotic circumstances of Olympic matters following World War II prompted IOC President Sigfrid Edström to turn a "thumbs down" to the possibility of any additions

to Helsinki's Olympic program of events. This fact, of course, dealt a death knell to the possibility of staging two separate breaststroke events. FINA, however, did make a distinction in the rules for swimming each variation of breaststroke, including the option of using one breaststroke form or the other in the breaststroke event. One style was labeled "A," or orthodox/conventional breaststroke; a second style was labeled "B," or butterfly-breaststroke.⁴⁵ Of amusing significance is the fact that FINA forbid alternate use of the two strokes in any singular race, with heats, semi-finals, and finals considered as separate races, a rule, by the way, which was discarded a few years later. Incredulously, they deemed that separate world records would be recognized by FINA for both "A" and "B" strokes. But most disparagingly for Armbruster and the advocates for implementing the use of the dolphin kick in Stroke "B," at least, the ruling body continued to forbid any up and down movements of the legs in the vertical plane, thus negating any possibility for the butterfly to become a separate event for the 1952 Olympic Games.

1953: Seeing the Dawn, Daylight Beckons

In FINA's April 1952 *Bulletin*, it is clear that the argument for creating a new and separate event for butterfly-breaststroke (stroke "B") was gaining momentum in various parts of the world.⁴⁶ That argument was accelerated, ironically, by the so-called "look" of the 200 meters Breaststroke event at the Helsinki Olympic Games in August of 1952. There, the breaststroke heats included a curious mix of conventional breaststrokers (stroke "A"),



The 1956 medallists (Barney archives)

butterfly-breaststrokers (stroke “B”), and, astonishingly, a completely different class of breaststrokers which might have been labeled stroke “C” if the rules makers had exercised any foresight at all. This group featured the vanguard of the underwater breaststroke movement, a technique, by the way, that the Japanese would perfect to dominate the breaststroke event four years later at the 1956 Olympic Games in Melbourne.⁴⁷ What a mess. One wonders what it would have been like to be a stroke and turn official in the middle of such a quixotic collection of styles occurring both under and over the surface of the water.

Clearly, it was time to return breaststroke to a conventional posture, not to mention breathe life into a new event called butterfly. During the autumn of 1952, the swimming world weighed in on the issue as well as the travesty noted at Helsinki. Never had the swimming world experienced such a fuss. At any rate, so far as FINA and international swimming were concerned, January 1953 became the benchmark moment in the separation of the orthodox breaststroke from the butterfly-breaststroke. The option of recovering the arms over the water in breaststroke, as well as the “A” and the “B” options disappeared from FINA’s rules, and, most importantly for Armbruster and “Friends of the Butterfly,” the rules, for the very first time, not only separated the two events, but allowed up and down movements of the legs in butterfly.⁴⁸ Hallelujah! The door that had been slammed shut in Armbruster’s face for so long had swung open at last, at least in international swimming. A year later, the rules committees of the AAU and the NCAA modified their swimming rules books to recognize butterfly as a separate stroke effective for the 1954-1955 season.

As the newly approved stroke moved cautiously through the dawn of its shakedown swims in the early 1950’s, it looked eerily familiar, like some sort of mystical illusion perhaps, appearing out of the fog of the stagnant seas of the Depression. But it was not an illusion, because even as the stroke began to acquire a measure of sophistication, there was no hiding the fact that it looked almost exactly like D.A. Armbruster’s old 1935 Dolphin Breaststroke.⁴⁹ As the saying goes, “the more things change, the more they remain the same.” All that aside, there is little doubt, that in the end, Armbruster’s quest endowed the world of competitive swimming with the final yet critical ingredient in the program of events we swim today. For the favorite son of Iowa swimming, the entire saga had been nothing less than a triumph of will or, more metaphorically perhaps, his own personal “long night’s journey into day.” ■

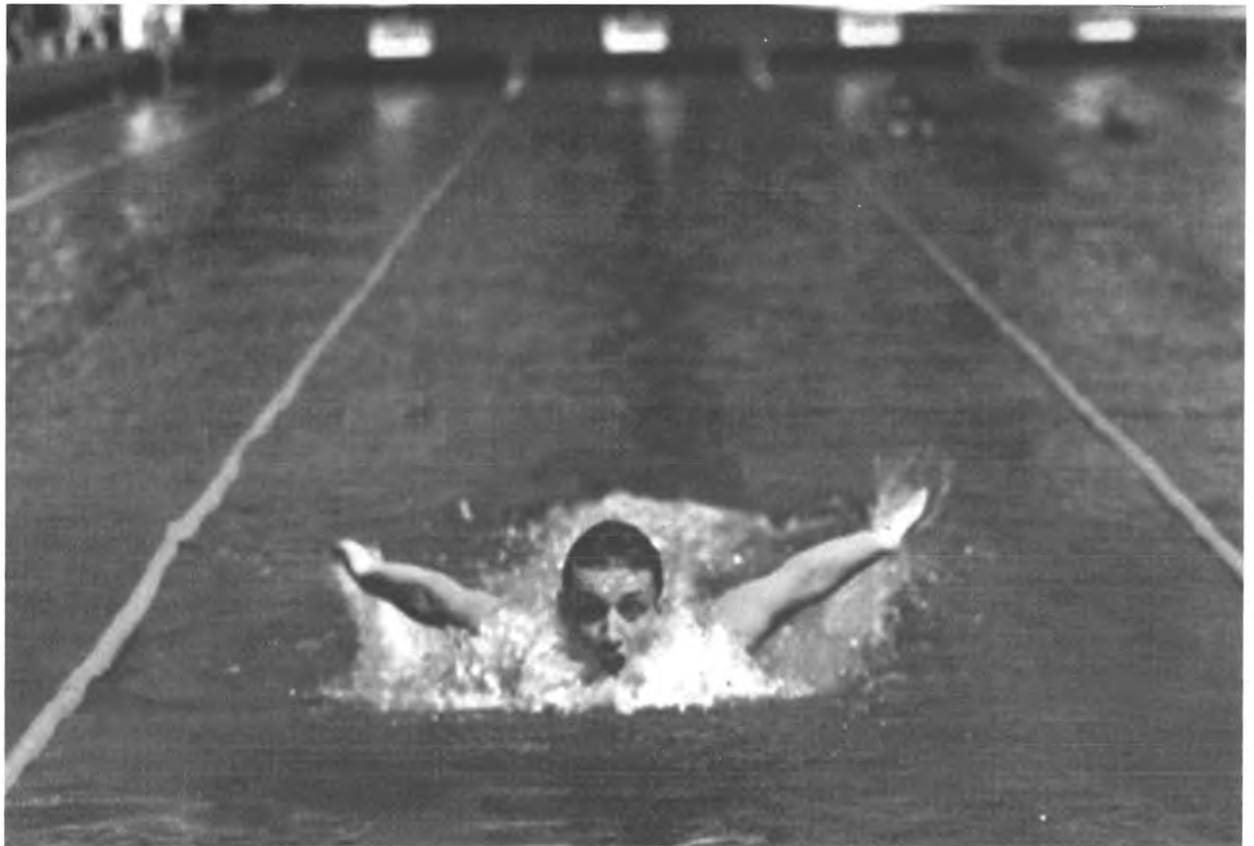
**A slightly different version of this article has been published in: Crowther, Nigel B., Barney, Robert, K & Heine, Michael K. (Eds.): Cultural Imperialism in Action. Critiques in the Global Olympic Trust. Eight International Symposium for Olympic Research. University of Western Ontario 2006, 65 - 85.*

Notes:

- 1 The scenario surrounding Bill Yorzyk’s introduction to swimming at Springfield College in 1950 was recounted to David Barney in a telephone conversation with Yorzyk on 7 March 2006. Yorzyk’s early athletic record gave absolutely no indication that in time he would become an Olympic champion. He remembers that he was the first one “cut” at tryouts for the various athletic teams of his high school (Northampton, Massachusetts). To finally become associated with his school’s athletic endeavors, he resorted to organizing an aquatic club in his junior year, and a school swimming team in his senior year. He did not swim; he administered and supervised.
- 2 Ibid.
- 3 Yorzyk recalls that his Freshman swimming experience on the Springfield College team was entirely without note. He could not even “make the freestyle relay team, even as an alternate.” As related to Robert Barney in a personal interview at Yorzyk’s Sturbridge, Massachusetts home, 25 June 2006.
- 4 Email, William Yorzyk to David Barney, 14 March 2006.
- 5 Ibid.
- 6 See Matt Mann and Charles Fries, *Swimming* (Englewood Cliffs, New Jersey: Prentice-Hall, 1940), p. 45.
- 7 See, for instance, Cecil M. Colwin, *Breakthrough Swimming* (Champaign, Illinois: Human Kinetics, 2002), pp. 30-31.
- 8 For an account of this exciting race, see George Russell, *The Olympic Century Series* (Volume 9) – *IX Olympiad, Amsterdam 1928-Lake Placid 1932* (Los Angeles: World Sport and Research Publications, Inc., 1999), pp. 82-84.
- 9 See François Oppenheim, *The History of Swimming*, translated from the French by Swimming World Books (New York: Swimming World Books, 1970), p. 120.
- 10 See *New York Times* (hereafter cited as *NYT*), 15 March 1926, ProQuest Historical Newspapers-The New York Times (1851-2003) Data Base (hereafter cited as ProQuest-*NYT*). Here the *NYT* comments on the first two appearances in the United States of world breaststroke record holder Erich Rademacher, where he was said to have “. . . aroused considerable discussion concerning what should be considered standard form in this style of natation. It was a matter of general comment when the invading ace appeared in the Yale pool on Tuesday and at the New York Athletic Club on Wednesday that his action does not conform strictly with the requirements laid down and universally accepted in this country. These requirements include steady balance of entire body, as well as absolute similarity in the respective movements of arms and legs and Rademacher not only throws out the left knee more than the right in performing the kick but he fails to keep his feet on an even plane, the left often lifting to break the surface, the right remaining always submerged. Rademacher, nevertheless, has competed all over Europe and no murmur has come from abroad to indicate that anywhere his style was deemed unorthodox . . .”
- 11 See *1935 NCAA Swimming and Diving Guide* (New York: American Sports Publishing Company, 1935), p. 12.
- 12 See *1945 NCAA Official Swimming Guide*, pp. 41-43. *The NCAA Guide* considered records and performances occurring the previous year, in this case, a review of the 1944 (21st annual) NCAA Championship Meet written by RJH Kiphuth, chairman of the NCAA Rules Committee. Over the years, the *Guide*’s title would change to include the word “Official,” rules and records for the College and University sports of diving and water polo, and, as well, rules and records of Interscholastic Swimming, Diving, and Water Polo.
- 13 Biographical information on the Spence brothers can be gleaned from at least three fundamental sources: (1) the International Swimming Hall of Fame Archives (ISHOF): www.ISHOF.org/67-SpenceBrothers.html; (2) the Rutgers University Sports Hall of Fame Archives: www.scarletknights.com/history/hof_97.html;

- and (3) Buck Dawson, *Chikopi and Akomak: The Story of the Matt Mann Sports and Wilderness Camps* (Fort Lauderdale, Florida: Hoffman Publishing Company, 1993), p. 387.
- 14 Henry Myers to Mr. [Robert] Kiphuth, 13 October 1940; published in Robert J. H. Kiphuth, *Swimming* (New York: The Ronald Press Company, 1942), pp. 80-82. Kiphuth's book, *Swimming*, was re-published later the same year (1942) by A. S. Barnes & Company of New York as part of the Barnes Sports Book Series, a set of volumes presented in "instructional manual" context.
 - 15 *Ibid.*, pp. 80-82
 - 16 *Ibid.*, p. 82.
 - 17 *Ibid.*, p. 79.
 - 18 See *1935 NCAA Swimming and Diving Guide*, p. 12.
 - 19 In a footnote to the final "Breast Stroke" results at the Berlin Games, published in the *British Olympic Association Official Report*, compilers of the "Swimming" account commented that: "Higgins used the new butterfly stroke intermittently." See *British Olympic Association: Official Report of the XIth Olympiad, 1936* (London: British Olympic Association, 1936), p. 176. Higgins' fourth place time of 2:45.2 in the final was 3.7 seconds behind Japan's Hamuro, who won the gold medal in the Olympic record time of 2:41.5.
Not all swimming officials in the world were enthusiastic about the butterfly arm motion in the breaststroke, as we learn from the cryptic comments of the composers (Messers G. Collins, J. H. Derbyshire, R. P. Green, and G. Matveieff) of the 1936 Olympic Games "Swimming" report for the British Olympic Committee. Commenting on the performances of American swimmers, including its breaststrokers, the following opinion was presented: "The Breast-stroke swimmers [Americans] used the butterfly style, which was a failure; none of the men competitors being able to maintain their stroke even for half the distance." Brackets ours. See *Ibid.*, *British Olympic Association: Official Report, 1936*, p. 168.
 - 20 The contribution of John Higgins to the evolution of the butterfly-breaststroke was one thing; his career at Ohio State University, where he was an All American swimmer, as well as senior captain, was another. Perhaps his most significant contributions to sport, it appears to us, was his long and legendary service to the United States Navy and to the Naval Academy's aquatic program. He was elected president of the American College Swimming Coaches Association in 1965; a year later he was inducted into the International Swimming Hall of Fame, first as a swimmer, then as a coach.
 - 21 In fact, it was while sitting in the spectator stands viewing a "finals session" of the 2005 NCAA Swimming and Diving Championships at the University of Minnesota's stunning facility in Minneapolis that our interest in this investigation was originally born. We noted that the *Official Program*, in listing the NCAA's annual butterfly champions through the years, extended the list all the way back to 1935, an egregious error in our estimation, and one that should be corrected. *The Official NCAA Division I Men's 2005 Swimming & Diving Championship Meet Program* (Lexington, Kentucky: Published by the National Collegiate Athletic Association, CBS and Host Communications, 2005), see p. 40.
 - 22 See *NCAA Swimming & Diving Guides, 1937 to 1954*, inclusively.
 - 23 *1955 NCAA Swimming & Diving Guide*, Rule IX, Breaststroke Rules, pp. 139-140.
 - 24 For biographical information on Armbruster, see: www.ISOH.org/66DavidArmbruster.html.
 - 25 See Ernie Maglischo, *Swimming Faster* (Palo Alto, California: Mayfield Publishing Company, 1982); and Ernie Maglischo, *Swimming Fastest* (Palo Alto California: Mayfield Publishing Company, 1993).
 - 26 There is little doubt that C. H. McCloy, America's first "giant" in the bioscientific realm of physical education and exercise, had immense impact on Armbruster's approach to coaching swimming. McCloy arrived at the University of Iowa in 1930, fourteen years after Armbruster's arrival there. Armbruster could hardly have had a better mentor in the application of science to physical movement. McCloy, a PhD graduate from Columbia University, saw the human organism as "more body than mind." Though he became largely known for his studies on the biomechanical and anthropometrical approaches to movement and exercise, he was well grounded in other aspects of sport science, including anatomy, exercise physiology, and tests and measurements. As much as he expounded on and experimented in the field of scientific research applied to sport movement and exercise, he was an outspoken critic of the pontifications made by leaders in American physical education on the so-called "value theories" of sport (democracy, harmony, teamwork, tolerance, sacrifice, sportsmanship, etc.). For a concise but condensed description of McCloy's career accomplishments, see Ellen W. Gerber, *Innovators and Institutions in Physical Education* (Philadelphia: Lea & Febiger, 1971), pp. 403-409. The earliest known collaboration between Armbruster and McCloy appears to have been a co-authored study on swimming and water hydraulics. See "Introduction," in David A. Armbruster, *Competitive Swimming and Diving* (St. Louis: C. V. Mosby Company, 1942), p. 26.
 - 27 See David A. Armbruster, "Under-Water Observation Windows for Use in the Study of Technique in Swimming Strokes," *NCAA Swimming and Diving Guide* (New York: American Publishing Company, 1940), pp. 71-73. Here, Armbruster describes how he designed five under-water observation windows placed in the sides of the University of Iowa's 20 yards pool built in 1926, windows behind which he carried out observation and photographic analyses beginning in 1928.
 - 28 Aside from domination in the breaststroke, Japanese swimmers overwhelmed their opponents in Los Angeles in 1932, especially in men's swimming. Male Japanese swimmers finished first and second in the 100 meter freestyle; third, fourth, and fifth in the 400 meter freestyle; first and second in the 1,500 meters freestyle; first, second, and third in the 100 meters backstroke; and first in the 800s meter freestyle relay.
 - 29 Between 1942 and 1973, Armbruster's original book, *Competitive Swimming and Diving* (St. Louis: C. V. Mosby Company, 1942), went through six editions (1942, 1950, 1958, 1963, 1968, 1973), each one enlarged from the previous edition to include the latest research analysis updates. This was a longevity record unmatched by any other technical book ever published on swimming. Whereas Armbruster was the sole author of the first edition, subsequent editions were co-authored with noted sport scientists (for example, University of Southern California's Laurence Morehouse), diving coaches (for instance, Indiana University's Hobert Billingsley), and swimming coaches (including Armbruster's successor at Iowa, Robert Allen).
 - 30 Sieg's frolic-like kicking in the Iowa pool in the spring of 1932, the very first notation of what might be called a "dolphin fishtail" kick, is described by Armbruster in his seminal article on the evolution of the "Dolphin Breast Stroke." See David A. Armbruster and Jack G. Sieg, "The Dolphin Breast Stroke," *The Journal of Health and Physical Education*, Vol. VI, No. 4, April 1935, pp. 23-26, and p. 58. Armbruster's pertinent remarks were as follows: "Now let us go back about three years. One day in a moment of relaxation and play, the writer [Armbruster] saw Jack Sieg go under water, lie on his side, with his arms trailing at the sides, imitating a fish, imitating the undulating movement with his head. I have often seen boys do this in water but never saw anyone derive the speed that Sieg was able to attain from it. We then tried it with the body face down, and the result was even greater. We then had him do it for speed against some of our best flutter-crawl kickers—no one could beat him" (pp. 24). Brackets ours.
 - 31 George Corsan, *At Home in the Water: Swimming, Diving, Lifesaving, Water Sports, Natatoriums* (New York: Young Men's

- Christian Association Press, 1910).
- 32 George H. Corsan, Sr., *The Diving and Swimming Book* (New York: A. S. Barnes & Company, 1924).
- 33 For more on this encounter, see:
www.ISHOF.org/DavidArmbruster66.html
- 34 David A. Armbruster, *Competitive Swimming and Diving* (St. Louis, C. V. Mosby Company, 1942), p. 195.
- 35 This was reported in the *Journal of Health and Physical Education*, Vol. 6, No. 4, April 1935, p. 3.
- 36 Armbruster recounted this episode almost immediately after its occurrence. See "The Dolphin Breast Stroke," *The Journal of Health and Physical Education*, Vol. VI, No. 4, April 1935, p. 23.
- 37 *Ibid.*, pp. 24-25.
- 38 *Ibid.* p. 23.
- 39 Armbruster's concern on this point is ably supported by a 1926 *New York Times* article on "Swimming" written by John Drebringer. Wrote Drebringer: "... some of our leading experts now are wondering whether we have not gone beyond the limit in the drastic enforcement of breast-stroke requirements as here [in the USA] interpreted. Europe is the birthplace of the stroke and the compiler of the basic laws governing its usage in competition, yet evidently European authorities are not nearly as strict as American officials in upholding the formulated rules. There is source for thought in that." See "Swimming," *NYT*, 15 March 1926, ProQuest-NYT. Brackets ours. .
- 40 Armbruster, "The Dolphin Breast Stroke," *American Journal of Health and Physical Education*, Vol. IV, No. 2, April 1935, p. 23.
- 41 D. A. Armbruster, "The New Dolphin Breast Stroke on Trial," *1937 NCAA Swimming and Diving Guide* (New York, American Publishing Company), pp 52-57
- 42 *Ibid.*, p. 55. In effect, Armbruster's plea, as he himself stated it, was: "Let's speed up the breast stroke!" (p. 57).
- 43 *FINA (Fédération Internationale de Natation Amateur) Bureau Bulletin*, No. IV, October 1938, p 13.
- 44 The American voice for this objective to occur in Helsinki in 1952 came from Max Ritter, American Honorary Secretary of FINA's Executive Bureau. In a letter to Sweden's Bert Söllfors, FINA Secretary, Ritter outlined the controversy and posed a solution: ". . . I am very sorry to see this disharmony in our ranks. The most difficult thing is – I think so – the question of the Olympic programme. If it should be possible to have the approval of the I.O.C. for an increase of this program by a special event for the Butterfly stroke and for the Medley Relay (both for men and women), then it would be possible to change our decision according [to] the wishes [of] our opponents, even if the [arguments] concerning the increase of the expenses caused to the National Olympic Committees remains in full validity. If the I.O.C. maintains his opposition against all changes of the Olympic program, then our situation will be very difficult and I don't know how we shall find a way out to [satisfy] all!! You may have the opportunity to see Mr. Edstrom, President of the I.O.C., before the meeting of the I.O.C. to be held next April in Switzerland and I recommend [that] you inform him about all the difficulties we have and ask him to support our request." See Max Ritter to Bert Söllfors, 6 March 1949, ISHOF, Fort Lauderdale, Florida, USA. Brackets ours. We are grateful to Bob Duenkel, Curator of ISHOF, for bringing this source to our attention.
- 45 See *FINA Bureau Bulletin*, No. 9, January 1949, pp. 21-22.
- 46 *FINA Bureau Bulletin*, April 1952.
- 47 In the 200 meter breaststroke at Melbourne, Japan's Masaru Furukawa won the gold medal in a startling time of 2:34.7. In a spirited battle for the silver medal, Masahiro Yoshimura edged the Soviet Union's Charis Yunichev by .1 of a second.
- 48 See *1953-1956 FINA Rule Book*, p. 29.
- 49 See *1955 NCAA Swimming and Diving Guide*, p. 139.



Yorzzyk flying (Barney archives)

Chronology of Butterfly

- 1911.** D.A. Armbruster meets George Corsan Sr. at a swim clinic in Toronto, where Corsan discusses and demonstrates the fish-tail kick, thinking of it as a possible alternative to the 4 and 6 beat freestyle kicking patterns used at that time.
- 1916.** D.A. Armbruster begins a forty-two year career as head swimming coach at the University of Iowa.
- 1926.** Erich Rademacher (Germany) begins to use a variation of the scissors kick in breaststroke swimming, as well as over-the-water arm recoveries on turns and later finishes, resulting in “official” world record swims free of disqualification by European officials. Makes first appearance in the United States, swimming exhibitions at the NY Athletic Club and Yale University.
- 1928.** Erich Rademacher wins silver medal in 200 Breaststroke at the Amsterdam Olympics. Also wins gold as a member (goal tender) of Germany’s winning water polo team
- 1928.** Walter Spence, et al, begin using “fly-away stroke” on turns and finishes, in short course breaststroke events as well as opening leg of three-stroke medley events.
- 1928.** D.A. Armbruster begins a twenty-year study on “The Science of Swimming.”
- 1932.** Armbruster begins experimentation at the University of Iowa with Jack Sieg on the “dolphin breaststroke kick”
- 1933.** Henry Myers uses first “wall-to-wall” over-arm recovery in opening breaststroke leg of a three-stroke medley race against world champion Wallace Spence in a preliminary heat at an AAU meet at the Brooklyn Central YMCA, leading to a popular adoption of the technique for breaststroke swimming.
- 1934.** Lester Kaplan and Paul Friesel begin using “butterfly-breaststroke” style wall-to-wall in 100 yards breaststroke events. Attempt to break world record of 1:06.8 at City College pool in January in New York City. Kaplan narrowly misses record but proves how much faster the over-the-water arm recovery is than conventional underwater breaststroke recovery.
- 1935.** Armbruster and Sieg conduct a demonstration of the “dolphin breaststroke” for the NCAA Rules Committee at the NCAA Championship Meet at Harvard University.
- 1935.** Armbruster publishes benchmark article “The Dolphin Breaststroke” in the April issue of *The Journal of Health and Physical Education*.
- 1937.** Armbruster publishes “The New Dolphin Breaststroke on Trial” in the Educational Section of the *1937 NCAA Swimming and Diving Guide*.
- 1938.** FINA Bureau falls one vote short of prohibiting the “butterfly” recovery in breaststroke. Prohibits up and down movement of the legs in the vertical plane in breaststroke, thwarting Armbruster’s plea for international acceptance of the dolphin breaststroke kick.
- 1940.** Cancellation of the 1940 Olympics, ironically scheduled for Tokyo, Japan.
- 1944.** Cancellation of the 1944 Olympics originally scheduled for London, a city left in ruins by the Luftwaffe’s blitz bombing during WWII.
- 1948.** All eight finalists in the London Olympics 200 Meters Breaststroke event use the butterfly-breaststroke technique.
- 1949.** FINA creates subtle but only partial separation of butterfly from breaststroke. Declares that breaststroke swimmers must opt to swim either Stroke “A” (conventional breaststroke) or Stroke “B” (butterfly breaststroke). Also declares hat strokes cannot be used either in alternation or intermittently and that FINA will recognize separate world records for each stroke.
- 1950.** FINA Bureau petitions the IOC to add 100 meters butterfly-breaststroke (Stroke “B”) events for both men and women at the 1952 Games in Helsinki. IOC subsequently rejects petition for any changes in the Olympic program for ’52 Games but “tables with intent” to review separation of the two strokes at its Congress meetings in Helsinki following the ’52 Games.
- 1952.** The Helsinki Olympics 200 Breaststroke event features a three-way mix of breaststroke styles: conventional breaststroke, butterfly breaststroke, and underwater breaststroke.
- 1953.** FINA finally separates butterfly completely from breaststroke. Allows up and down movements of the legs in the vertical plane for the first time, thus legalizing use of dolphin kicking technique. Returns breaststroke to orthodox status by disallowing over-the-water recovery in breaststroke. Recognizes separate world records in each event.
- 1954.** Buddy Baercke wins first 100-yards Butterfly event in National AAU Championships at Yale, using the dolphin butterfly stroke and kick.
- 1955.** NCAA Rules Committee separates breaststroke from butterfly for the 1954-1955 season, including the 1955 Championship meet. Follows FINA’s 1953 adjustments to both butterfly and breaststroke rules.
- 1955.** Phillip Drake of North Carolina wins first 200 Butterfly event at NCAA Championships at Miami of Ohio University.
- 1956.** Bill Yorzyk of the United States wins first 200 Butterfly event in Olympic history at Melbourne, Australia. Swims double-dolphin butterfly with alternate breathing for entire 200 meters, establishing a style that would be used for decades to come.
- 1956.** Shelley Mann of the United States wins first 100 Butterfly event for women in Olympic history at Melbourne, Australia. Uses the dolphin butterfly style taught to her by Charles “Red” Silvia and Bill Yorzyk at the U.S. Olympic Trials at the Brennan Pools in Detroit, Michigan.
- 1958.** D.A. Armbruster retires as head coach of swimming at the University of Iowa.
- 1970.** NCAA finally eliminates the option of using orthodox breaststroke kicking in butterfly for the 1970-71 season.