N

NOT-QUITE-FULL-SIZE BOARDS

BOARD-SURFING begins now in a form somewhat abbreviated but ancient, honorable, and admirable. For here we find the less-than-full-size boards. These are the surf vehicles that lack the size and buoyancy to enable a rider to float entirely free of the water when he paddles, or when he simply rests while waiting for a wave.

Names for such boards differ according to size, shape, and the part of the world in which they are used. Some common names are "arm boards," "belly boards," "half-boards," "*paipo* boards" (a Hawaiian name), "kneel boards," and so forth.

The entire family could be called simply "semi-boards." This may be understood as applying to anything from the smallest arm board to the largest kneel board, which in everything but length may resemble rather closely a full-sized foam-plastic surfboard of modern design.

Many readers, like the writer, grew up using the plain old name, "belly board." This can be confusing because some people think that "belly" is a rather vulgar way to refer to the abdomen. However, it means the front part of the human body, extending from the breastbone to the pelvic region. Therefore, it could be said that most riders do "belly" on such boards.

Smallest among the semi-boards are the so-called "hand boards." Tom Blake has told the author of using such boards in the surf off Florida beaches as early as 1922. Very early examples were also em-

Photograph by Dr. Don James

ployed along the beaches of the Australian east coast by body surfers who sought some convenient device for increasing their planing, or "hydroplaning," action as they rode. (See details on hydroplaning in the following section.)

Hand boards do fill that need nicely—provided they are used by surfers with sufficient skill. A hand board may have no more than a square foot of area. The best known have been no more than 8 to 13 inches wide and 13 to 15 inches long. Usually the front end has a semicircular shape, while the other three sides form an incomplete rectangle. Either a plank or plywood, from 3/8 to 3/4 of an inch thick, may provide the material.

The hand-board surfer is basically a body surfer with an assist. He holds the hand board by its sides, extended at arm's length ahead of him as he rides. Its planing action enables him to ride higher in the water, with head up, and he can breathe with greater comfort. Such a board can prolong his ride and make it more pleasant.

Some surfers hold the hand board in one hand while using the other for extra stroking. This is especially helpful if the wave has weakened so that there is danger of dropping out of it, or if it is a multiple-break type of wave, which re-forms as a swell after breaking, only to rise and break again later on.

Hand boards, or arm boards, have proven their usefulness under big-wave riding conditions. They are simple and inexpensive to make and not difficult to learn to use, provided the surfer already has a grasp of body-surfing techniques. They hold the same dangers as all hard boards of whatever size: they can do much harm if they strike a swimmer or another surfer.

Today, hand boards and arm boards seem to be used far less often in the principal surfing centers than either the air-filled surf mats or the larger semi-boards, such as the Hawaiian *paipo* boards.

A striking photograph by Dr. Don James, which appears on the jacket of this book and again on page 56, shows four surfers riding at Sunset Beach, on Oahu. Three stand on full boards. Above them rides the fourth, on a *paipo* semi-board. He is at the moment above and behind the full boards. Yet a few moments later he may be farther down the wave than his companions, for his board is small and, above all, swift. Surfers call a slow board "mushy." There's nothing mushy about a *paipo* or a modern belly board when it is handled by a master.

Another of Dr. James' great surfing photographs on page 110 reveals a basic secret of *paipo* speed under big-wave conditions—once again at Hawaii's famed Sunset Beach. The *paipo* rider's body is *completely* clear of the water. He has arched his body like a swan-diver, so that his legs and even the fins on his feet ride clear of the surface. The speed of his slide is marked by the wake of white foam leading all the way back to the peak.

Small as his board is—and its thin forward edge is easily seen—it is skimming so fast that not over two thirds of its undersurface is actually in contact with the water. It seems almost as though it might take off and fly fully free of the wave.

The rider's reason for angling to his right is clear. The peak from which he shot downward lies to his left, and already the crest from that peak has spilled down the wave front a distance as great as the *paipo*-boardsman has descended, but it is safely separated from him.

(His gesture of exuberance – lifting his left arm – is not essential to his sliding form. It's more like the traditional hat-holding gesture of rodeo riders, who seem to be fanning the ears of their bucking steeds.)

Somewhat larger boards than this one, known as kneel boards, may enable a very good rider to go even further and actually pull himself up on the board so that he kneels or hunches over it, his ankles and fins (if any) held up out of the water behind the board. With such a larger semi-board, the volume of material used and its weight will range from a little more than a third, to as much as a half of the volume and weight of the material in a full surfboard.

The weight of a modern belly or *paipo* semi-board thus may be held to as little as 7 to 10 pounds, and that of a larger kneel board to around 12 or 14 pounds.

Here again we see the great lightness and buoyancy of new foam-plastic materials. A 10-pound semi-board of such construction, including a protective fiberglass and resin jacket plus a fin of suitable size, should be capable of supporting about 75 or 80 pounds additional weight before it is forced under the surface of the sea. A 14-pound semi-board should support correspondingly greater added weight. Yet the board's inherent buoyancy is *not* the main factor that enables it to uphold most or even all the body weight of its rider during the swiftest part of his ride. The main factor is the hydroplaning effect created as the bottom of the board slides over the water.

On page 113, this effect is seen again in another classic photograph by Dr. James, also taken at Sunset Beach. The *paipo* board *(right)* appears to be about three quarters out of the water as it and also the standard surfboard *(left)* slide in a race to escape the mountainous white water.

Since speed is so essential in surfing on big, steep waves, the subject of hydroplane action deserves closer consideration.

Hydroplane action in board-surfing. Recent years have taught millions what wonders of weight-carrying can be accomplished by small wood or metal surfaces if they are forced to move fast enough through water. The swiftly growing sport of water-skiing supplies the best-known instances. A heavy water skier, plus a "passenger" posing ornamentally on his shoulders, may ride on a single ski of moderate size, provided it and they are pulled along at sufficient speed. The ski may be formed of aluminum or iron. It need not float. In action, its hydroplane "lift," not its buoyancy, does the work.

From Piraeus, the port of Athens, Greece, to Aegina, Ydra, and other history-rich islands of the Aegean Sea, passengers now ride a motor vessel with metal fins, or hydroplanes, mounted below its hull. At sufficient speed, the entire heavy vessel simply rises above the blue sea waters, supported entirely on these small hydroplane surfaces.

Similar effects are at work when a semi-board moves fast enough over the water. The surf mat is, so to speak, the balloon of surfing vehicles. Thanks to its great buoyancy, it floats and bears weight, motionless or moving. The semi-board, however, is more like the airplane. It generates lift as a result of its motion.

Photograph by Dr. Don James

Photograph by Dr. Don James

In a relatively small wave, a *paipo* surfer when riding more nearly level may seem to hide his board completely. In this picture, taken at Makaha Beach, Hawaii, the hydroplaning effect is hardly noticeable; the rider's legs are in, not above, the water. The nose of the board extends to a point just about under his chin.

Conceivably, a semi-board could be built of a heavy solid, dense enough to sink in sea water if not otherwise supported. It would not be a very practical piece of hardware, for it would often be lost to its rider and he would have to turn diver in an effort to recover it. However, even such a board, with its negative rather than positive buoyancy, could provide strong lifting effect if properly handled during a swift surfing ride.

Speed through the water is what makes the difference. For a deeper understanding of surfing, both on semi-boards and full-sized boards, let us consider the subject of speed.

How fast does a surfer really travel? Typical waves ridden at the most popular surfing beaches of the world travel shoreward at speeds between 9 and 13 miles per hour from the time they peak and start to break until the wave form has finally been converted into a broad swash of white water approaching the sand or rock of the beach.

If a surfer were able to stay at the top, or crest, of such a wave, he would move shoreward at about 13 to 17 feet per second. The water around him is moving shoreward too, so his speed in relation to that water is perhaps no more than from 4 to 7 feet per second – not enough to achieve much of a hydroplaning effect. However, once the surfer has caught the wave (or, rather, once it has caught *him*), a new phase begins. In front of and below him lies the inclined plane of the shoreward-moving front face of the wave. His ride during this all-important phase is largely a slide down that incline. And as he slides down he increases his speed *through the water*.

This increase is intensified – as we have already noted – when the surfer, instead of riding straight before the wave, slides diagonally across its face, toward either the left or the right.

In Figure 11, a semi-board rider is seen, at left, at the crest of a peaking swell, just about to start his slide. At right, we see that same

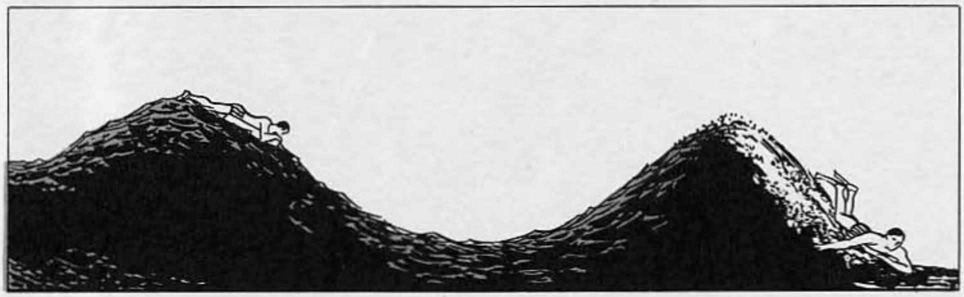
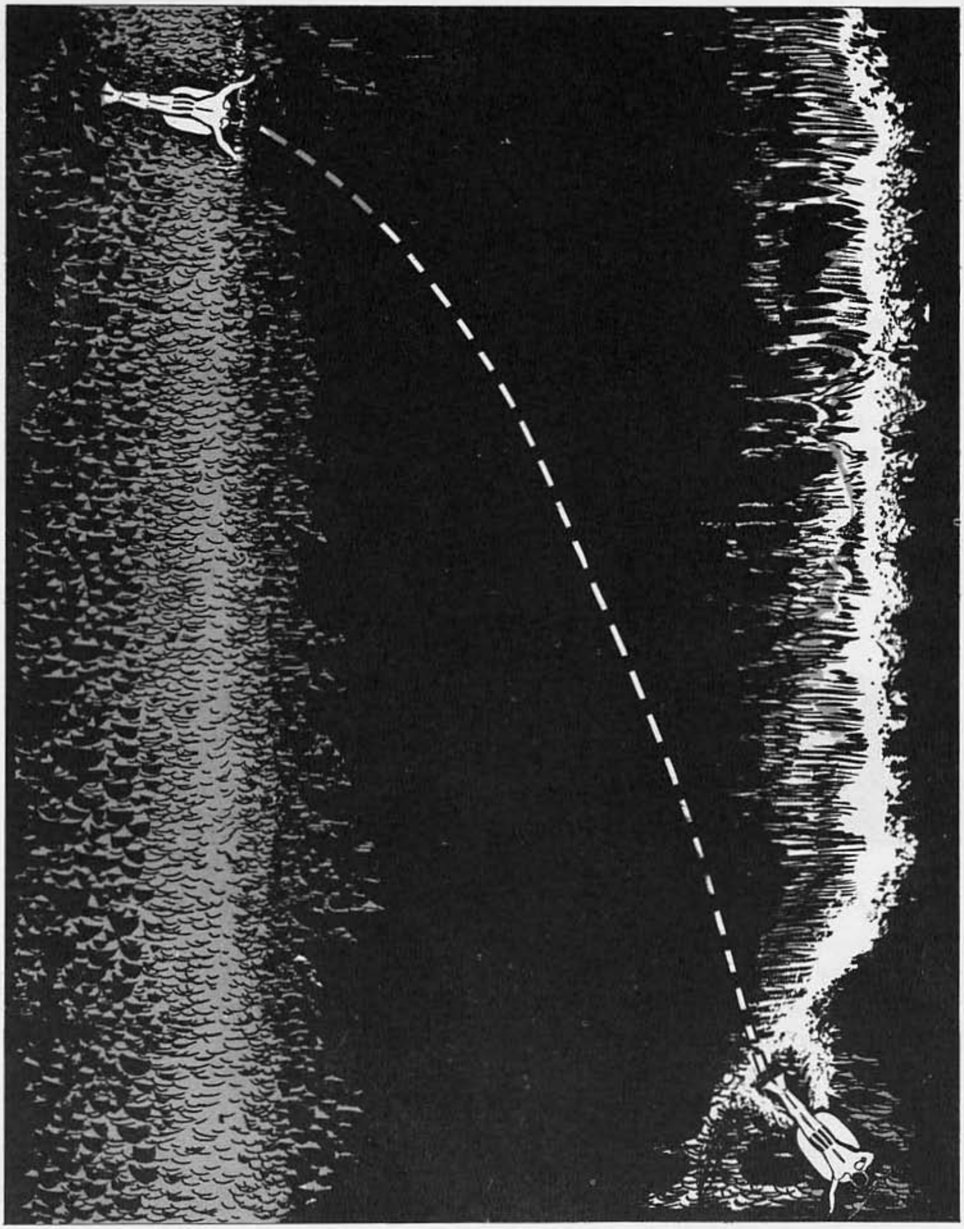


Figure 11

swell after it has moved some distance shoreward – say 45 feet. Meanwhile, the rider has slid down to near the base of the swell.

The swell, we may assume, took about three seconds to move that 45 feet closer to shore. The rider thus seems to have moved in three seconds 45 feet plus the added distance down the front face of the wave. If that added distance down were 10 feet, he would have traveled a total of 55 feet, or about 18 feet per second.

However, we get the true picture of his distance and speed in this bird's-eye-view of him in Figure 12, below. We see that while the



wave crest moved 45 feet closer to shore, this rider actually traveled just about twice as far—90 feet.

His average speed, if we plot it against the ocean bottom as background, was about 30 feet per second. Meanwhile, and this is what is most important here, his board's speed relative to the water over which it slid was between one half and two thirds as much. In other words, between 15 and 20 feet per second, or about 10 to 13½ miles an hour.

This example is simplified and approximate, but it makes clear the motion relationships that produce the wonderful possibilities of surf-riding, whether on a semi-board or a full board.

If a surfer using a semi-board or a full board is towed along by means of a towline at speeds between 10 and 13½ miles per hour, he discovers many possibilities. He notes lifting by means of the hydroplane effect, steering by digging deeper one side or the other, and other means of control—all operating to a greater extent than he could achieve by paddling, even at his best speed in still water.

The modern *paipo* board and its somewhat larger cousin, the kneel board, show notably less surface friction in the water than do full-size boards. A full plastic-foam surfboard may have as much as 10 to 15 square feet wet at the slow start of a ride. Its fin, which has two sides in the water, may add to the total a full square foot or even a bit more.

In contrast, a modern *paipo* or belly-style semi-board probably has no more than 5 square feet in the water, and its small fin presents not more than half a square foot additional surface. The somewhat larger kneel board is likely to total no more than about 7 square feet of surface in the water, including fin.

When big surf runs and waves break fast, the smaller resistance of the semi-boards may give them that extra speed which makes the difference between a narrow escape, followed by a getaway—or a wipe-out.

Considerations such as this make it ridiculous to regard all semi-boards as if they were simply "kid stuff." It is a fact, however, that their use at this time is relatively limited on the beaches of the continental United States. They come into their own more definitely under conditions found especially at great surfing areas of the Hawaiian Islands. However, signs of a belly-board "revival" appear rather distinctly now on the surfing horizon.

Many *paipo* or kneel boards are in important respects smaller examples of the construction used in full-size surfboards. Some of the best are even reinforced with a wooden stringer and are jacketed with as many as two layers of fiberglass fabric. However, any engineer knows that the breaking and twisting stresses are far smaller in boards 3½ to 4½ feet long than in those 8 to 10 feet long. Semi-boards of whatever material are relatively stronger (as well as lighter and smaller) than full boards of comparable proportions.

Among youngish surfers, many an old, battered, heavily "dinged" full board has been sawed up and its front end—sometimes also its back end—converted into a belly board. The tailblock contours of many, though not all, modern Malibu boards curve in a way that makes them quite acceptable to serve as semi-boards.

Such conversions seem to need a fin area no more than one third the fin area of the former full surfboard. It is best to test a fin as small as even one fourth the former fin, to see whether or not it suffices for satisfactory performance.

For the sake of sentiment or auld lang syne, it seems necessary to mention the old-time belly-board style: a flat, thin plane of plywood or even a plank, not more than 1 or 1¼ inches thick.

The most common shapes then ranged from 25 to 40 inches in length and from 22 to 26 inches in width. Some users liked them even 45 inches long, or longer. Wide and sometimes wild variations in contour and proportion were seen in the surf. Such belly boards, when not waterlogged, weighed between 10 and 12 pounds. The total volume of a board was commonly between ⅓ and ½ cubic feet, or, as a carpenter might prefer to say, between 4 and 6 board-feet of wood.

Obviously so little pine or fir had little surplus buoyancy. It floated, and perhaps could support an additional 30 pounds before being forced under water. Not its buoyancy but its lightness and sizable planing surface made it useful in the surf. Boards such as these were commonly used for catching waves that broke in waist-deep water.

Detailed suggestions for the use of modern semi-boards are hardly needed here. Much already stated for the use of surf mats (Section M) applies also to semi-boards. The same is true of material presented in the sections dealing with body-surfing (Section O) and with full surfboards (Section P).

Swim fins and semi-boards—a fitting team. Almost any surfing that can be done by means of a semi-board can be done more easily and more fully by a rider wearing fins, provided he knows how to use them.

This applies to the "take-out" – getting through the surf to the take-off point – and also to the take-off itself. It applies likewise during the ride shoreward.

The kneeling ride, which some more ambitious semi-boardsmen like, can be performed even with fins on, provided the rider learns how *not* to trip over them.

The one semi-board style that does not consort well with fins is the stand-up ride. Some skilled surfers manage to do it on kneel boards. These are almost super-*paipo* boards – big enough so that, when they are in full course, the rider not only can kneel upright but may even stand for a while – but only if he is barefoot.

The possibility of wearing fins is one of the major advantages of most semi-board surfing.

Getting out through opposing surf with a semi-board is, generally speaking, about as difficult as with an inflated surf mat. A semi-board, weighing from three to four times as much as a surf mat, is more difficult to lift over oncoming white water, as far as weight goes. However, lacking the bulk and the balloon-like qualities of the fat mats, a small semi-board gives far less trouble in brisk or gusty winds.

The semi-board surfer should learn to use both his arms (paddling) and his legs (fin-kicking) in order to get maximum drive in the surf. Usually, he pushes his board up and over oncoming waves. To make this as easy as possible, he seeks to reduce the number of waves he encounters. Hence he waits for the lull between sets of waves, makes use of rip currents, or follows any channel or sector of the surf that shows the smallest and "friendliest" breakers.

Common sense suggests that the semi-board rider keep clear of bathing and swimming areas that are forbidden to full-board riders. A wild semi-board, propelled by a wave, can do much harm. It is solid and hard and, besides, is often less easy to spot in motion than is a standard board.

The lightness and the moderate size of a semi-board sometimes tempts a surfer to toss it over an oncoming breaker, then to dive beneath and come up to regain the board in quieter water. Such tossing should be taboo if there is even a small chance that a swimmer or a body surfer may be, unseen, beyond the approaching crest.