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AUTHOR'S GENEALOGY

The articles contained herein are the result of the life study handed down by many generations.

"Old" Willie Dunn, the famous Professional Golfer of Musselborough, Scotland, who played in the Great Golf Match of 1849, with his brother Jamie Dunn against Allen Robinson and Tom Morris for four hundred pounds sterling a side, was the father of the yet more famous Tom Dunn of North Berwick, Scotland, who from the time he was 20 years old till he died at the age of 52 was universally acknowledged the leading authority on golf. I am the youngest son of Tom Dunn. I was born at North Berwick, Scotland, March 11th, in the year of 1882 and, as my forefathers did, I cut my first teeth on a golf club.

On my mother's side were the Gourlays of Musselborough, and my mother Isabella Gourlay, true to her family traditions, was the greatest woman golfer of her day. Her father, John Gourlay, was the famous leather and feather golf ball maker. He was also a golfer of great renown.

"Old" Willie Dunn, Musselborough | John Gourlay, Musselborough
Tom Dunn, North Berwick | Isabella Gourlay, Musselborough
Father of | Father of
Father of | Mother of

Seymour Dunn

Back farther still on my mother's side there was a Douglas Gourlay, who was appointed teacher of golf to James V of Scotland. All these family connections have been a great help in preparing me for the great object of my life, which is to get down to the very root of this great problem, "The Fundamentals of Golf". I have not indulged in practicing my own play for the capture of championship honors but have devoted myself to studying the science of the game, and analyzing every detail connected with it. I chose the work of a teacher as the best field for study for there all manner of questions arise and have to be met with a perfectly clear, correct and understandable explanation. In the twenty years that I have been teaching Golf, I must have given as many if not more golf lessons than any other teacher that ever lived, and I hope among you, my dear children, there will arise at least one, a wielder of the club able to uphold the name of Dunn.

*Musselborough was the original center of Golf, much older than St. Andrews.
PRELIMINARY ANALYSIS OF THE GOLF SWING

What is our working theory of the golf swing to be?

If we study the swing of any good player practising, we find the ball is struck unerringly, and with such regularity that we get the impression the whole thing is automatic. It is automatic and has a mechanical foundation; so far so good. Next, what are the mechanics? Let us analyze the swing by aid of geometry. We observe that the golf club head describes an arc in the up-swing and redraws the same arc in the down-swing returning to its starting point. Take an ordinary drawing compass such as draftsmen use and with it draw an arc; redraw this same arc; what are the essentials in the compass necessary to the redrawing of the same arc? There are two. The pivotal point of the compass must be placed in exactly the same place it occupied at the first drawing and kept there for if this point slips or moves out of place you are lost. Essential 1 is a steady center properly placed.

The radius of the compass must be the same if that arc is to be redrawn precisely the same; therefore, we must set our compass at the proper radius and keep it at that same radius thruout. For if the radius is contracted or extended it must necessarily spoil the arc. Essential 2 is maintain a proper radius. See illustration 2, page 31.

On close observation we notice the golf club head does not describe a true circle but an ellipse; nevertheless
it is a true ellipse which shows that the radius is governed. This complication will be dealt with later.

We will now observe the fact that the arc of the club head's swing is neither a horizontal nor a vertical arc but all on a slope; it is oblique, and this obliquity is all in a plane. See Illustration 3, page 31.

Here then, we have another essential, as it is obvious of course that the oblique plane of the swing must line up with the ball in order to hit it. Essential 3 is: swing the club in a plane of obliquity that lines up with the ball.

A geometricalian will now see that if the foregoing three essentials are observed in the golf swing the center of the club face must strike the center of the ball and if it fails to do so then one or more of those essentials must have been violated in which case it is up to the student to find out which and by aid of the instructor to correct it.

The striking surface of a golf club (called the face) may seem to the beginner a very small area with which to strike the ball. As a matter of fact it is really a very liberal area since the shot will be no good unless the ball is struck with a certain central point no larger than a pin point, to strike with other than the exact center of gravity would cause the ball to curve off its course.

In order to send the ball in a given direction there are two other essentials which must be observed: The horizontal diameter of the arc of the swing must be in parallel with the direction of play. See Illustration 4, page 31. Essential 4 is—swing club in parallel with line of play.

The club face must face square to the desired direction of play at the moment of impact. Essential 5 is—strike with square impact.
So much for the geometry of the golf swing. We will now briefly analyze the physical movements involved. We find the golf swing is one united effort, the result of four properly blended movements (a) shoulder movement, (b) hip movement, (c) arm movement, (d) wrist movement.

For preliminary analyzing purposes the swing should be divided into two principal combined movements: (1) The lateral movement created by (a) the round about movement of the shoulders and (b) the side-wise action of the hips.

(2) The vertical movement created by the upward and downward action of (c) the arms and (d) the wrists. From geometric analysis we find that the arc of the golf club head was an oblique ellipse, and we know from geometry that this is to be had by blending lateral and vertical curves. The combined movements of the hips and shoulders cause the club head to describe a lateral curve, like the curve described by a scythe in the hands of a man mowing.

The combined movements of the arms and wrists cause the club head to describe a vertical curve like the curve described by a sledge hammer in the hands of a blacksmith striking downward upon an anvil. In the golf stroke we find the scythe and sledge hammer strokes blended into one stroke. The student should prove this point immediately by taking a golf club in hand and addressing a ball. See Illustration 5. Imagine you are going to strike the ball not in regular order of the golf stroke but that the ball is to be flattened out on the
ground like a pancake, just as the blacksmith flattens out iron on the anvil. **Raise the club to the right shoulder exactly as a blacksmith would lift a sledge hammer straight up in front of him over his right shoulder and pause in your position at the top of this act.** See Illustration 6, page 35. The club head has described a vertical curve and your arms and wrists have done exactly what they do in the golf swing. Hold this position keeping club and arms in the same position relative to the shoulders and now turn the shoulders to the right turning arms and club with the shoulders and you find yourself at the top position of the golf swing. See Illustration 7, page 35.

Next unwind the shoulders returning to position shown in Illustration 6 and now bring the club down to the first position assumed, illustration 5. Now again raise the club like a blacksmith but this time over the left shoulder and when you have completed this vertical movement turn the shoulders to the left and you find yourself at the finish of the golf swing. See Illustration 8, page 35.

It is the proper blending of these two principal movements the round about; and the up and down that make the golf swing.

You now have the whole sum and substance of the golf swing. We have of course done the swing in the order of putting the cart before the horse. This was done for the purpose of analysis. Our next step is to properly hitch the horse to the cart. Since the golf swing is a thing which requires great exactness, we must go very deeply into the matter in order to understand it completely.
SUMMARY OF PRELIMINARY ANALYSIS

By closely observing the following mechanical principles you are certain to improve, and by analyzing your strokes according to these mechanical principles, you can find a clear and logical explanation for any and all your troubles.

To dispatch the ball correctly in a given direction we must have the three following essentials:
1. Strike with the center of the club face.
2. Club head must be travelling in the direction of play during the impact.
3. Club face must be at right angles to the direction of play.

To insure these ends we should build up our swing on the following mechanical principles, and we should regard these mechanical principles as the mechanical laws of our swing.

Mechanical Principles

Failure to accomplish Essential 1 is due to violation of one or more of these three

1. Maintain a steady swing center.
2. Maintain a proper swing radius.
3. Swing club in a proper plane of obliquity.
4. Swing club parallel to intended direction of play.
5. Club face must be controlled so that it is square to the intended direction of play at the moment of impact.

These principles are all set forth in this series of lessons and each lesson should be mastered before proceeding to the next. By mastered, I mean not merely understood but practiced till physical application has become second nature—unconscious habit.
FUNDAMENTAL 4

*Swing club along line of play*

The club should swing in line with the intended line of play.*

Properly blended lateral motion controls the direction of the swing.

Lateral motion is created chiefly by the shoulder rotary action.

*We may therefore regard the shoulder rotary action as the predominating factor in the control of the direction or parallelism of the swing.*

Side action of the arms and twisting of the wrists will also create lateral motion, but the chief work of the arms and wrists is to create vertical motion. The shoulder rotary motion converts the arm and wrist vertical motion into a parallel swing. The shoulder rotary motion creates a round-about scythe-like sweeping motion, while the arms and wrists create an up-and-down hammering-like motion. It is the *proper blending* or co-ordination of the combined arm and wrist upward-and-downward movements with the shoulder-round-about movement that makes a parallel swing. To be orthodox in the full swing shoulders should turn exactly 90° each way. This leaves the arms and wrists free to make a purely upward and downward hammering motion. Thus you gain the maximum of power from all. The extent of the lateral motion each way must always be equal, to make the swing parallel to or in direction with the line of play. By varying the extent of the vertical motion we vary the length of our different strokes.

*It is a common fault for players to swing their club in a course out of line with the intended line of play; they swing their club in a course somewhat diagonally across the line or direction of play. This is termed cutting across the ball.*
It is the proper extent of lateral rotation (each way right and left) done at the proper time and at the proper speed in relation to the up-and-down motion that makes proper blending.

Illustrations 42, 43, 44 and 45 give a good idea of what is meant by making the swing parallel with the line of play. These pictures were taken from overhead, thru the oblique plane of the swing.

Illustrations 46, 47, 48 and 49, page 63, show what is meant by a swing being out of parallel. This is a very common fault which causes a chronic curved flight to the right, or a misdirected flight straight out to the left of intended direction, depending on how the hands work. Frequently a player might make a swing in which during the upswing and at the top of the swing all has been in perfect parallel, but on the way down the shoulders might race ahead too much and swerve the club out of parallel. This brings the club into contact with the ball before the wrists have fully recovered from their sagging and this combination causes a slice. The ball starts out to the left of the direct line and swerves round to the right. If the club head is not dragging behind at the point of impact, the result will be a misdirected ball starting out to the left and continuing straight on out to the left; but generally the club head will be behind because the racing ahead of the shoulders disorganizes the timing of the swing.
Parallelism of Swing, i.e. Swinging in Line with the Line of Play
Pictures taken from overhead thru the oblique plane of the swing
My wording, which he has seen and which I use frequently in teaching, implies the same thing as Ernest Jones’s “Swing the club-head,” but I somehow feel that the word “swing” refers only to part of the game and to me means no hit at all, whereas I teach “hitting with the right hand past the left, making the club-head do the work.”
If the shoulders unwind at the right speed but start to unwind to early, the result will be that the ball is driven straight out to the left—misdirection.

If the shoulders in addition to starting too early race ahead, the wrists will not have time to get the club head thru on time and the result will be that the ball starts out to the left but immediately begins to curve to the right—misdirection and slice.

Illustrations 50, 51, 52 and 53, page 64, show a swing out of parallel the other way. This causes either a misdirected flight straight out to the right of intended line of play or a curved flight to the left, known as a hook. The hook is the most likely result. The wrists in this case are apt to get the club head thru too soon; for since the shoulders have turned too far to the right they are very likely to be behind in their action and thus disorganize the timing of the swing.

The stance, i.e. the set of the feet, has a very considerable bearing on the control of the parallel of the swing because the position of the feet affects the shoulder turn.

The open stance is inclined to restrict shoulder turn to the right and encourages turning to the left.

The closed stance encourages the shoulders to turn to the right and restricts their turning to the left. Therefore the correct stance is a question of which will produce a parallel swing. The closed stance is better for those who have stiff joints while the open stance is generally better for those of supple joints. The upswing is an important point to consider in this matter. If the upswing is made in perfect parallel, the swing thru is then more likely to be so.
Incorrect Swing: Out of parallel, generally destroys the timings of the wrist snap and makes their action sluggish. This combination of errors results in a form of swing commonly known as cutting across the ball, causing a slice in which the ball starts out to left of direct line of play and curves around to right. Shoulders did not turn enough to the right at top of swing, and turned too much to the left at finish. Pictures taken from overhead.
46  TOP OF SWING
Incorrect; out of parallel

47  PART WAY DOWN
Incorrect; out of parallel

48  PART WAY UP TO FINISH
Incorrect; out of parallel

49  FINISH OF SWING
Incorrect; out of parallel
Incorrect Swing: Out of parallel, generally destroys the timings of the wrist snap and makes their action sluggish. This combination of errors results in a form of swing commonly known as cutting across the ball, causing a slice in which the ball starts out to left of direct line of play and curves around to right. Shoulders did not turn enough to the right at top of swing, and turned too much to the left at finish. Pictures taken from overhead.
Incorrect Swing: Out of parallel, generally destroys timing of wrist snap, making wrists' action occur too early. This combination of errors results in a form of swing commonly known as shoving across the ball—causes a hook, ball starts out to right of direct line of play and curves round to left. Shoulders turned too far to the right at top of swing, not far enough at finish.
You can have the finest swing in the world and yet not hit good shots. There is no guarantee that a super swing will produce a good shot because a super swing does not guarantee the face coming square to the ball. But you can have a bad swing and the strength to hit squarely with judgment and skill – and be a very successful golfer. Experience has taught me that the primordial thing is to teach a pupil to find the ball, without any specific swing action.
FUNDAMENTAL 5

*Strike with square impact*

During impact, club face should be at right angles to the desired direction of the ball's flight. *Hand mastery over club controls this.*

Prevent both “supination”, and pronation” of club face. Correct *set* of the hands controls this.

“Pronation” means to turn the club face Prone, i. e., face downward.

“Supination” means just the opposite, i. e., face upward.

Correct *set* of the hands varies with the individual. Different individuals have different peculiarities of forearm development. A tendency to “slice” or “hook”, might be corrected by a certain *set* of the hands.

“Slice” is only that part of the ball’s flight in which the ball *curves* to the right. A ball driven *straight* out to the right is not sliced, but merely a misdirected flight. “Hook” is only that part of the ball’s flight in which the ball *curves* to the left. A ball driven *straight* out to the left is merely a misdirected flight.

Illustration 54, page 67 shows the orthodox “*Setting*” of the two hands.

The “*Set*” of the hands means the extent to which they are set over or under the club handle. It will be seen in this illustration that the two angles formed by
the thumb and fore part of the hand are like inverted V’s with the point pointing straight upward to the player’s head. Illustration 55 shows the two V’s pointing to the player’s right shoulder. Illustration 56 shows the two V’s pointing to the player’s left shoulder.

Some players, especially beginners, are very prone to allow the hands and consequently the club face to twist at the instant of impact, as shown in Illustration 55. **There are two causes for this:** 1 Insufficient effort on the part of the hands to control the angle at which the club should face **during the impact.** The resulting flight is a slice, with excessively high trajectory in which the ball starts immediately out to the right of intended direction of play. When the club faces as shown in illustration 55, it is said to have “supinated”, and causes this particular class of slice.

2 **Incorrect set** of the hands will also cause the club face to supinate at the moment of impact. The cure is obvious—the hands must either make greater effort to control the facing of the club at the point of impact, or be set with the V’s pointing more nearly towards the right shoulder at the outset when taking the grip of the club, with club facing square to the desired direction of play. This might be the only proper setting of the hands for the particular individual concerned, and because this is perhaps the natural way for the hands to act when the muscles of the forearms are placed under the intense tension of the stroke. There are muscles in the forearms known as the “**Supinators**”; which turn the hands palm upward, and the “**Pronators**” which turn the
54 Pronation impact. Orthodox set of the hands

55 Supination impact. Causes excessively high trajectory, misdirection to right and slice.

56 Pronation impact. Causes smothered flight; ball starts out to left curving to left and ducks downward.

57 Collapse of left wrist. Causes immediate misdirection to right, low trajectory and slice.
hands palm downward. These muscles control the angle at which the club faces.

Some people are very peculiarly developed in these muscles having one of them considerably stronger than the others, due perhaps to some peculiar occupation. Naturally the stronger muscle exercises a greater influence over the hands than the weaker, and therefore twists the hands and consequently the club face in its particular direction of action. The pronators of the right arm would naturally pronate the club face, i.e., turn it prone or face downwards. This is why no hard and fast rule can be laid down as the correct set of the hands that will hold good for all players. Some players are very prone to pronate excessively with the Pronator Radii teres muscle of their right forearm at the instant of impact, which imparts a smothered, hooked flight to the ball. The ball starts out to the left and curves yet further to the left, and suddenly ducks downward, running a good distance along the ground.

There are two cures for this fault but first must be determined the real cause. The causes might be: 1 Right hand is overruling the left hand, because the left hand is allowing it to. The cure is—grip firmer with the left hand and looser with the right. 2 One or both hands may be set wrongly, the two V's being set so that they point too much towards the right shoulder, and during the stroke the hands refuse to remain so set, they twist over to the left and thereby twist the club head also. See Illustration 56, page 67.

Some players are very strongly inclined to set their hands with V's pointing towards the right shoulder, in
You can go on swinging a club till you are blue in the face and never gain a yard in length unless you work on the ‘heart of the swing’ — the just-before-and-after-impact section. This cannot be glossed over.
will drag behind, and the club face will consequently not be square to the line of play, nor will it be perpendicular to the initial line of trajectory.

A common failing among players is the inability to get the club head thru; it drags behind the hands. Collapse of the left wrist is the cause. The left wrist gives way or collapses because of a lack of back pressure from the left hand against the club handle, due to its feeble effort in this direction, or due to its inability to hold its own under the strain of excessive shoulder rotary effort imposed upon it.

The cures are obvious: first determine the true cause of the trouble. Is the left hand loafing or are the shoulders overstraining? Either increase the effort of the left hand or moderate the effort of the shoulders; perhaps both are a little at fault.

Just how the left hand functions as a fulcrum is explained more fully in Transmission of power, see contents.

The resulting flight from this fault is—ball departs immediately out to the right of intended direction, flying very low with curve to the right.
too far away from the ball with the body weight upon the balls of the feet and settling back upon the heels during the swing. The cure in a case of this kind would be to stand nearer the ball, with the body weight on the heels. This is the proper place to have it for every stroke.

Class 2 Hook  Definition—ball starts out to the right of the direct line of play and immediately begins to swerve to the left. This is because the club face strikes the ball a glancing blow, cutting across the line of play from inside the line of play to outside. The trouble is that the swing is out of parallel. Fundamental 4 is being violated. See Illustrations 50, 51, 52, and 53, page 64. Also the wrists are snapping too soon.

Class 3 Hook  Definition—ball starts immediately to the left and curving yet farther to the left suddenly ducks downward and runs a good distance along the ground. Pronation of the club face is the trouble. Fundamental 5 is being violated, right hand is overruling the left.

Class 4 Hook  Definition—ball starts immediately to the left, flying high. Left hand as a fulcrum is not giving way but is offering too early a resistance to the right hand and is therefore getting the club head thru too soon. This is another form of violation of Fundamental 5. The effort of the hands is badly timed.

MISDIRECTION

Misdirection is caused by faulty hand control of the angle at which the club faces during impact, and also by the swing being out of parallel due to faulty rotary shoulder action.
62 784 yards was the total for 3 drives. This was nothing extraordinary but it was good enough to win. All balls had to be kept within certain narrow limits on the fairway, or the total distance of the drive was lost.
Note position of peg in ground, to player's right. This shows direction in which initial effort should be made from the top of the swing.

Merely to illustrate the idea of—start the club down to the right of you.
In the downswing the reason why one motion should be started ahead of another is because of time required by each before it can reach its climax.

The hips being slower than the shoulders must be started first so that they can get ahead. Likewise the shoulders are slower than the arms and therefore must be allowed a very considerable start ahead of the arms. Finally the arms must be allowed to get almost to the climax of their action before the wrists with their terrific speed are finally let loose. Thus by their different rates of speed each comes to its climax at one and the same moment, i.e. the moment of impact.

If wrists were allowed to start at top of swing and were expended in a concentrated form, the climax of their effort would be expended before the club reached the ball and therefore lost.
REAR VIEW, THE FULL SWING STROKE
Action Pictures in Motion Picture Series

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As the object of learning to swing is to be able to strike the centre of the back of the ball (or just below it) with the centre of the club, on a small area of club-face, and at the same time, send the club-head “through” the ball very quickly, quite a degree of control is required.

This is the part—the bringing of accuracy to the swing—that takes so much time to learn, and
This picture was taken with a high speed camera, yet the speed of the club was so great as to leave a 6-foot blurred image on the plate in so short a duration of exposure.
Percentage of Available Power Actually Utilized

It has been shown above that the wrists, arms, and shoulders did not exert their maximum effort at the same time. The available energy was first concentrated in shoulder action, then in arm action, and at the critical time was transferred entirely to the wrists. It is not possible to put the full amount of energy into shoulder action, arm action, and wrist action at the same time. In the first place the shoulders, being very slow of action, must start ahead of the arms. Secondly, the shoulder action, being very powerful, and many times stronger than the wrists, should be used sparingly or the wrists will not be equal to the strain. Thirdly, if the right shoulder gets into the stroke too much, the swing will be thrown out of line.

In my own case, it appears that the wrists produced approximately 85% of the velocity of the club head, while the arms and the shoulders produced the remaining 15%. This explains why some players with powerful wrists are able to obtain such great distance with a short swing. The arms and shoulders play but a very small part in producing speed as compared with the wrists.

There are two kinds of strength: Hippopotamus-like strength, which is slow and forceful and I shall call this brute force. Then there is Deer-like strength, which is rather frail but quick in motion. I shall call this strength of speed.

Muscular energy may be applied in two distinctly different ways: The leg muscles which one may employ in pushing a heavy article like a piano are the same muscles which are employed in running. But, in pushing a
piano, you apply leg muscles to produce the brute force kind of strength while in running you employ them to produce speed.

A golf ball is not a large heavy object like a piano. It is more nearly like a fly, and since our object is to propel the golf ball the greatest possible distance, speed is what we need as speed gives distance.

Hitch a hippopotamus to a deer in a tug-of-war contest; the hippopotamus could walk away with the deer. Now match the hippopotamus with a deer in a foot race; the hippopotamus would be left behind because its strength is slow brute force. In our shoulders we have the brute force kind of strength while our wrists possess strength of speed. This is exactly why the left shoulder must come to a stop for an infinitesimal fraction of a second at the point of impact. If it did not, the brute force of the shoulders would wreck the wrist action and the left wrist could not function as a fulcrum because the shoulder action would carry it away.

Finally the shoulders are dragged around to the finish of the swing by the momentum of the club. Absence of this instantaneous stopping of the left shoulder is the cause of nearly all the slicing and lack of distance among the great mass of Golfers.

A Golfer is like a chain; no stronger than its weakest link. The weak link in every Golfer is the wrists. That is why we should not apply our maximum shoulder power; our wrists could not transmit it; they would collapse, or give away under the strain; the club head would get behind and a slice would be the result. The wrists are capable of very quick motion, therefore, their action
may be withheld till the very last moment in the downswing. Then, if the shoulders ease up and give the wrists a chance to do their work, they will snap the club head thru the ball, provided they make the necessary effort.

It follows that the matter of wrist strength determines somewhat the style a player should follow. For weak wrists a long swing is better; for strong wrists a short swing may be better. Since the wrists play such an important part in the matter of getting distance, every golfer should develop his wrist strength by regular exercise with a grip developer.

There are two distinctly different forms of stroke; the old St. Andrews arm swinging sweep in which the club was literally wound around the neck and which was best for the old solid Gutta-Percha ball, and the shorter swing in which the club head is snapped thru the ball by a powerful concentrated hit coming from the wrists. Of course, there must be some arm and shoulder sweep. The ideal swing is a moderate arm and shoulder sweep plus a terrific wrist snap.

A swing is made long or short by the extent of the upward arm action. Since the wrists, if strong, are capable of developing such tremendous velocity on the club head, it follows that they should play as large a part in the swing as possible. A short swing composed chiefly of wrist action produces a snap, while a long swinging arm action produces a sweep. If the wrists be strong, the player can get more distance out of a wrist snap hit than is possible from a long sweeping arm swing. Develop the wrists so that the percentage of wrist action composing the swing may be high, in other words, get after that
The 15% arm and shoulder sweep part is not so valuable. When I inquired of one of the longest drivers in the world, the secret of his phenomenal distance, he answered: “The shortness of my follow thru.” At first I did not understand him, so I watched him closely. We were playing an exhibition match and a few holes further on I asked him how I could get more distance. He replied, “Shorten your swing and put more wrist snap into it.” I did some thinking, and after a careful study of my own swing I found that I was over-swinging due to too much arm sweep. I discovered that in order to increase the wrist snap in my stroke, I had to reduce my arm sweep. In other words, I could not have a swing that was 85% wrist action and 85% arm action. By reducing the percentage of arm action I automatically increased the percentage of wrist action and got a wrist snap hit in place of a slow arm swing sweep.

In almost every case where golf students come to me to get greater distance, I find that weak wrists is the trouble, tho’ very often it is simply that the wrists are not being used; the strength may be there but is not being applied.

It has been said that the power which drives a golf ball is centrifugal force. It is not centrifugal force. It is an accumulation of speed produced by the rotary motion of three levers: the left shoulder, left arm, and club.

Centrifugal force is generated by the swing, but it is not the force which drives the ball. Centrifugal force is a force proceeding outward from the center of rotary motion. At the moment of impact, centrifugal force is directed downward and at right angles to the flight of
the ball. A force which is directed at right angles to the flight of the ball cannot drive the ball.

A golf club is a lever. The force which drives the levers comes from the right side of the player's body and is delivered to the club thru the player's right hand. The left hand is the fulcrum against which the right hand strikes. The shoulders and rest of the body are the foundation from which the arms and wrists work, the arm and shoulder actions are mere accessories to the wrists. The body carries the brunt of the load as does the concrete foundation under a stationary gas engine. The wrists are the main speed producers. The arms and shoulders, even when working to their utmost, are quite incapable of generating a speed anything like that of which the wrists are capable. So make quite sure of getting 100% action out of the wrists.
LEFT SIDE VIEW, THE FULL SWING STROKE
Action Pictures in Motion Picture Series

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NO GOLFER IS BETTER THAN HIS HANDS

No golfer is better than his hands. I repeat this statement often, because to me just to hear a golf ball go off the club tells me if the club has been held firmly or not. It is either ‘a sweet note of music’ or a false one. Yet we have thousands upon thousands of golfers looking for something else wrong in their swing when they mishit the ball. They do not want to know about the hands.
be kept within the carrying capacity of the player’s hands, or they will collapse and the stroke will be ruined.

It is highly desirable that we have all the hand strength it is possible for us to acquire.

Every golfer should have a grip developer (sometimes called a wrist machine), and use it to develop his grip.

The reason why many players “slice” is because they either do not have strong hands or they fail to use their hand strength at the critical moment when the power of the stroke is to be transmitted to the ball. When the hands work as they should, the player can actually feel that he is bending the club shaft on the ball. If you cannot feel this you will not get the distance of which you are capable.

The majority of players who fail in transmission of power do so because their left hand fails to act as a fulcrum for the right hand to strike against. The left hand must bear back against the right.

To understand this more fully take a club in hand and press the face of it against any solid obstruction, with enough force to bend the shaft. Maintain this pressure and ask yourself, “What am I doing with the upper palm of my left hand?” You will discover that you are very decidedly pressing the club handle backward against the forward pressure of the right hand. Take the left hand away and try to maintain the same bend in the club shaft and you will at once be convinced of this fact. This back pressure of the left hand must be exerted at the moment of impact if you are to overcome the resistance of the ball. If you fail to do it, the club handle may go thru, but the club head will come dangling along behind like a dog’s tail.

FUNDAMENTAL 12
USE YOUR HANDS,
  i.e. Prevent Leverage Collapse.

Some players might almost as well stick their hands in their pockets for all the use they make of them.
HITTING AGAINST THE BACK OF THE LEFT HAND

The left hand and impact positions that handicap golfers seek; there is no club-slip here, beginners note.
The left hand does less guiding in most swings than it should. It is the first link between the shaft and the body, and its main function is to form the swing, and yet at the right moment it resists the hit of the powerful right hand.
Sixty years ago I remember that outstanding instructor Seymour Dunn proclaiming that golf was 85 per cent hands and only 15 per cent body. Nothing in a lifetime's experience in golf has happened to make me think otherwise. How right he has been! The body action used by many players today – all knees and stomach – came into
The hands are the main driving force. The right hand strikes against the left, the left hand acts as a fulcrum for the right hand to strike against.

So that the left hand may function as a fulcrum there must be a resistance coming from the left side of the body. This left side resistance is to be against turning the body to the left only and not against the shifting of the weight to the left leg.

The left side of the body must resist against turning to the left because if it did not the left hand fulcrum would be carried away by the turn of the shoulders and then there would be no hand leverage.

The power we get from the right arm is in the form of a right fore-arm slap, and not in the form of a right hook punch from the right shoulder as in boxing. In order to get this right forearm slap the right elbow must be kept well in to the side of the body, especially immediately before impact.

In starting down from the top of the swing correct foot work is again very important. The first movement is the reaction of the hips. This places down the left heel so that it is in position to receive the weight of the body. The knees swing back as the body weight is shifted from the right leg to the left by the sidewise action of the hips. The right leg is the main brace which bears the brunt of all the strain and it should push the body weight thru the stroke. The right heel should rise off the ground before the ball is struck as it is this right foot work which enables the right leg to push the hips and body weight thru the ball. The left foot must have a good grip of the ground or there will be no resistance against turning to the left.
Don't forget: Strong hands and wrists are most essential to the golfer. Be sure to develop your hands by regular exercise with a wrist machine.
A golf swing as a purely physical movement is not difficult to do, and, from an artistic angle, a reasonably elegant and smooth action can be learned rapidly. Alex Morrison, in his "best golf seller" of the middle of the period between the two wars, offered to teach the golf swing by his method in a matter of a very few minutes, to anybody. Naturally this fact could not be disputed, for he did it, but it was far from teaching the pupil to play golf. To hit a golf ball precision is required, and this cannot be taught in a matter of minutes by anybody.
PART II

1. A Method

I LIKE to feel that the method I try to teach my pupils gives them every chance to use all the power they have, and does not demand that they "cut out" anything. A system that requires less than 100 per cent. use of either arm, for example, I cannot consider a good one.

To the very thoughtful beginner, learning painfully how to hold the club in a certain way, while remembering at the same time a dozen other important fundamentals, there must come a moment when he asks himself or his instructor, "Why must I learn all this?" The answer, which time has proved correct, is that, to do an accurate "swish" of the club-head, some such series of movements, now recognised as the golf swing, would be found necessary. Your teacher "short cuts" the endless experimenting that would be undertaken in looking for this golf-swing action alone.

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As the object of learning to swing is to be able to strike the centre of the back of the ball (or just below it) with the centre of the club, on a small area of club-face, and at the same time, send the club-head "through" the ball very quickly, quite a degree of control is required.

This is the part—the bringing of accuracy to the swing—that takes so much time to learn, and it is this precision that cannot be bought. It has to be learned the hard way, thank goodness, or many professionals would not earn a living!

All the various slogans such as "swing the club-head" are of great value in helping players to picture a wide, free action, but to me they imply slackness and looseness, if not qualified in some way.

When I demonstrate to pupils the slow-motion swing (a dozen of which swings are more tiring to do, by the way, than 20 full shots with a ball) I ask them to notice how I am able to get into a seemingly dead-slow action, a little, almost unnoticed, speed into the club-head, to send the ball on its way nearly 100 yards. To do this does not require strength, but control, and that is what every instructor aims at teaching and every golfer wants to learn.

I have found that to do an accurate, strong golf swing, golf muscles are needed. This is no discovery of course, but I am sure that it is essential to determine which are the weak muscles and work on them.

Most golfers want to begin to play golf in the way I prefer not to teach, and that is to learn to hit full shots first. I like to teach my beginner to play with a mashie first and then to work up via a spoon to a driver, but I have never come across a pupil who will do exactly what I want and go on perfecting his swing until I give the O.K. to go on the course.

So, taking an average person who has had no special development of his hands and wrists, it is found that to get any sort of results at all he is bound to use his big shoulder muscles, which are the only muscles he has. It is from this moment that the instructor often fails, for he allows his pupil to build up a swing, using the muscles he has, and does not trouble much to
"Hitting and stopping," or making the club head do the work. A good test for the hands but a strain on the left wrist

show him where his weakness lies, and set him instantly on the way to getting rid of the error caused by the monopoly these big muscles exercise.

I ask my pupils to run through a son of programme of movements, to show me what they can do, and then I show them what my training efforts have done for me, and although I do not claim that my system is the one and only one, I do find, to substantiate my claim to having a sound system, that every good player can with little trouble do the movements I have trained myself to do; so a fair, just, comparison can be made.

This shows up glaring physical weaknesses, and while “swing the club-head” is a good slogan, it makes no contribution to the building up of deficient muscles. To hit with the club-head it is necessary to have a correct grip, for not only must the club be held firmly, but the grip must allow the hands to apply power in the surest fashion, via the wrists.

Few players, unless they have used their wrists for other games, have in them enough strength, combined with flexibility, to control and amplify the speed they are able to impart from their shoulders and trunk, and so they are taught to try to make their already established big muscles do everything.

I like to get my pupils working straight away on training their hands to hold the club correctly, and then to train their forearm muscles to “work” using that particular grip.

In my “Test programme” I have found that every low-handicap golfer hits the ball easily and confidently with either hand alone. After a short spell of practice, he can do this on a turning action of the wrists as well as on a hinging action, like a pendulum putting stroke. This latter action shows up the weak-wristed players badly, I find.

Then comes the “hit and stop” test, which can only be made if the hands are “my way” on the shaft. The four-knuckle player cannot do it. This shows up the strength of the left arm and wrist in resisting the blow of the right hand and, by stopping the arm from going through, the body-sway is cut out, and so is the sweep of the arms. This makes the club-head do all the work, with a vengeance! Again the good players find this a “piece of cake”!

Hitting the ball off the right leg, the left leg hanging free from the ground, savours of a trick shot, but it has the virtue of showing at a glance whether the player leans into the ball, and proving it to him if he does; for only the good player can maintain his balance, and not have to ground the left foot after each stroke.

These simple little tests tell me at a glance just how good my pupil is and what I have to do to improve him.

My own game has been built up over a long period bearing in mind these tests, and I can get within about 20 yards of my best drive with a hit-and-stop action with a driver, and hit a No. 4 iron shot about 150 yards with my left hand alone.

Let me add that, as far as I know, no data on this subject of specific golf muscle-building has ever been given, and I have had to grope my way along according to my own ideas and following my own observations, endeavouring to build up my golfing muscles to the best of my ability.

If I had to start all over again, what would I do? I would do the same again certainly, but I would know now that my health would have been better had I kept going with contra exer-
NO GOLFER IS BETTER THAN HIS HANDS

NO GOLFER IS BETTER than his hands. I repeat this statement often, because to me just to hear a golf ball go off the club tells me if the club has been held firmly or not. It is either ‘a sweet note of music’ or a false one. Yet we have thousands upon thousands of golfers looking for something else wrong in their swing when they mishit the ball. They do not want to know about the hands.
An Exercise for Developing the Left Wrist

This also shows the bending and twisting action of the wrists as it is done in the swing proper.
look right. To be an orthodox striker is what every golfer should aim at—then, if he has genius, after learning to hit the ball effectively he can learn to do it in the most artistic way.

I like to feel that I hit the ball hard, but disguise the hit in a swing as much as possible; but many players who would imitate my swing should learn to hit first, as no golf ball was ever sent a long way without a very hard hit.

Your professional likes you to have a good-looking swing; it is a credit to him if he can teach you to play golf well and have a fine swing,
Sixty years ago I remember that outstanding instructor Seymour Dunn proclaiming that golf was 85 per cent hands and only 15 per cent body. Nothing in a lifetime’s experience in golf has happened to make me think otherwise. How right he has been! The body action used by many players today—all knees and stomach—came into
THE SEYMOUR DUNN CODE
— of —
STANDARDIZED GOLF INSTRUCTION FUNDAMENTALS.

GEOMETRICS

1. MAINTAIN STEADY SWING CENTER: Controlled by correct pivotal action of the body which keeps the player's head in place.
2. CONTROL SWING RADIUS: Controlled by player keeping left arm firm.
3. SWING ON OBLIQUE PLANE WITH BALL: Controlled by right arm and hand.
4. SWING IN LINE WITH DIRECTION OF PLAY: Controlled by shoulder turn.
5. STRIKE WITH SQUARE IMPACT: Controlled by correct hand set and balanced effort of the pronating muscles.

DYNAMICS

6. SHIFT BODY WEIGHT: Gives momentum to the blow.
7. ROTATE SHOULDERS: Gives power to the swing.
8. SWEEP WITH LEFT ARM: Gives speed to the swing.
9. DELAY RIGHT FOREARM AND WRIST HIT: Gives great speed to the club head.
10. TIME BOTH SWING AND STROKE: Harmonious co-ordination of all moving parts — vital to direction.
11. CONCENTRATE POWER AT IMPACT: Gives distance to the ball's flight.
12. TRANSMIT POWER TO BALL: Made possible by the left side resistance.
13. PROPORTION THE EFFORT: For consistency in play.

PSYCHOLOGY

14. SWING AUTOMATICALLY:
15. AIM EFFECTIVELY:
16. LOOK AT THE BALL:
17. PLAY THE SHOT:
18. THINK CORRECTLY:
19. FIND EFFECTIVE KEY THOUGHTS:
20. PERSEVERE:

The Sum Total = Good Golf
As Presented to USGA 1937

https://youtu.be/cTv3shyL0xw
GOLF

BY

HORACE G. HUTCHINSON

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WITH NUMEROUS ILLUSTRATIONS BY THOMAS HODGE
AND HARRY FURNISS

Second Edition

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I give it to the reader precisely in the shape in which it has been given to me:

'A gude new year t'ye, Maister Alexander, an' mony o' them! An' it's come weel in, the year has; for it's just a braw day for a mauch. Lod, sir, it aye seems to me the years, as they rise, skelp fester the tane after t'ither; they'll sune be makin' auld men o've a'. Hoo auld am I, d'ye ask, sir? Weel I was born June 16, 1821; and ye can calc'late that for yoursel'. Aye! as ye say, sir, born and bred in St. Andrews, an' a gowffer a' ma days. The vera first time, I think, I hae mind o' mysel' I was toddlin' aboot at the short holes, wi' a putter uneath ma bit oxter.

'I was made 'prentice to Allan as a ba'-macker at eighteen, and wrocht wi' him eliven years. We played, Allan and me the-gither, some geyan big mauches—ane in parteecler wi' the twa Dunns, Willie and Jamie, graund players baith, nane better—over fower greens. 'Twas a' through a braw fecht atweens—green an green—but we snoddit 'em bonnie ere the end o'it. I canna ca' to mind Allan an me was iver sae sair teckled as that time; though a wheen richt gude pair o' them did their best to pit oor twa noses oot o' joint. But it was na to be dune wi' Allan an' me. An awfu' player, puri Allan! the cunningest bit body o' a player, I dae think, that iver haun'led cleek an' putter. An' a kindly body tae, as it weel fits me to say, sir, an' wi' a walth o' slee pawky fun aboot him.

'I left Allan to keep the Green at Prestwick, and was there fourteen years. Three years efter Allan deed I cam to keep the Green here; an' here I hae been sin syne. Na! sir, I niver weary o' the gemm; an' I'm as ready noo to play any gentleman as I was in ma best days. I think I can play aboot as weil yet as I did in ma prime. No, may be, drive jist sae lang a ba'; but there's no muckle odds e'en in that yet. Jist the day I was sixty-four, I gaed roon' in a single wi' Mr. H. in 81. No that ill for the "Auld Horse" as they ca' me—it'll tak' the best of the young ones, I reckon, to be mony shots better than that.