

17. Persistently throw the ball out of bounds, lie on same, or in any way try to prolong the time of a game.
18. Check an opponent's crosse, or attempt to knock the same out of his hands in any way, unless both players are contending for the ball.
19. Deliberately strike another with his crosse or otherwise.

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## LAWN TENNIS.

### DESCRIPTION OF THE GAME.

**L**AWN TENNIS is played by two, three, or four people (though very seldom by three) on a smooth stretch of ground called a court which is laid out on a level surface of grass or turf, or occasionally on a broad floor under a covered roof in winter. The court is marked out with white lines on the ground indicating the boundaries, and the space is divided in two by a net three feet in height stretched across the centre from side to side.

Each player is armed with a racket, which is a wooden frame about a foot long and eight inches wide, the oval open space being covered with a fine network of catgut strings, and the frame supplied with a handle about 15 inches long. With this racket the players strike a ball  $2\frac{1}{2}$  inches in diameter, of rubber filled with compressed air and covered with felt.

This ball is knocked from one side of the net to the other back and forth until one side misses it—that is, fails to hit it at all, or knocks it into the net, or out of the court. Either side scores a point when the opponent fails to return the ball into his court. The object of the game, therefore, is to knock the ball into the opponent's court so that he cannot return it.

The first player to hit the ball is called the server (he is chosen by lot), and he throws the ball up into the air and knocks it over the net and into the court on the opposite side. After this service is delivered, each side must strike the ball in turn, hitting it either before it touches the ground (a volley) or after it has bounded only once. It is against the rule to volley in returning the service, but after this second stroke of each point, it is optional with the players whether they volley or return the ball on the first bounce.

The method of scoring is simple. The first point won for either side counts 15, and if each side should win one of the two first points, the score becomes 15—all, "all" meaning "even" in every case. The server's score is always called first and the first point therefore makes the score 15—love, or love—15 (according to whether the server or his opponent wins the first point). "Love" means nothing in tennis scoring. The second point for either side is 30 and the third 40. If the server wins the first two strokes, the score is 30—love; if won by the opponent, it is love—30; if each has won a point, the third count then makes the score 30—15, or 15—30, according to whether the



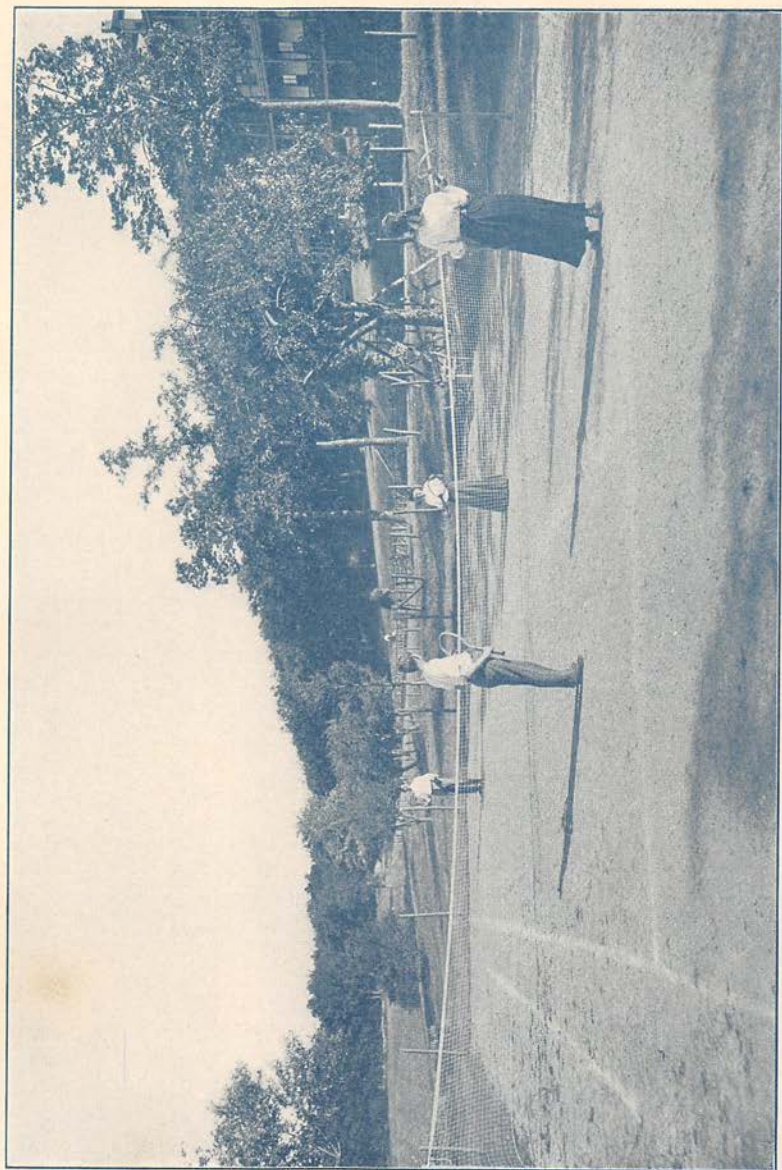
server or his opponent is ahead. Thirty—all follows when each side has won two points; 40—30 or 30—40 when one side has two and the other side three.

Either side wins a game when it has scored four points, unless each side wins three points, which would make the score 40—all, but which is called "deuce" instead. Here lies the only intricacy in the method of scoring. When both sides are tied at 40 or three points each, the score is deuce, and one side must win two more strokes than the other from this point in order to win the game—in other words, if the score once gets even at 40, neither side can win by a single point. From deuce, the score becomes "vantage-in" or "vantage-out," according to whether the server or his opponent is ahead (the server is always "in" and the opponent "out"). With vantage in his favor, either side can win the game by capturing the next point, but if it goes to the other side, the score returns to deuce again, and so on indefinitely until one side or the other has won two points in succession from deuce.

When a game has been won, the other side becomes the server, the service alternating with the games. The score by games is called with the server's score first, or sometimes in matches with the side that is ahead first. When the games are even, the score is called at 1—all, 2—all, 3—all, or 4—all as the case may be, but if it is even at 5—all, then deuce and vantage games are played just as in points during the games. Five—all is deuce and from this point it is necessary for one side or the other to win two games in succession to take the set, that is, as in the games, the set cannot be won by a majority of one, the winner must score at least two or more games than the loser. Most matches are the best two in three sets, although some championship matches are the best three in five sets.

The server must always strike the ball in the air before it touches the ground, but the opponent, who is known technically as the striker-out, is not allowed to strike the ball when first served until after it has bounded once. After these first two strokes, one from either side, the ball is always in play until one side or the other fails to return the ball properly and the opponent then scores a point. Either player, after the first stroke from either side, may play the ball before it has touched the ground, which is called a volley, or after it has struck and bounded once. If it is allowed to touch the ground a second time, the point is lost.

A drive is a fast hard stroke played underhand from the back of the court, and a smash is an overhand volley played very hard and fast to "kill" the ball by the speed of the stroke. A lob is a ball knocked up into the air to pass over an opponent's head, when he is at the net, or to gain time. To cut the ball is to strike it sideways, so that it twists rapidly on its own axis, like a billiard ball with "English," which makes it bound crooked.



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### LAWN TENNIS

(FROM A PHOTOGRAPH)

Next to Golf there is no out-door game which insures such a complete "change of mind" as "Lawn Tennis." President Roosevelt is one of its ardent devotees, and "often of an afternoon" finds relief and recreation in a game or two with the Ambassador from France. And, many is the brain-weary business man and woman, tired student or teacher, or stenographer, who has cause to be glad of a chance to indulge in the relaxation provided by this mind-resting and physical training game.

## RULES AS ADOPTED BY THE NATIONAL LAWN TENNIS ASSOCIATION.

*The Court.*—1. The Court is 78 feet long and 27 feet wide. It is divided across the middle by a net, the ends of which are attached to two posts, standing 3 feet outside of the court on either side. The height of the net is 3 feet 3 inches at the posts, and 3 feet in the middle. At each end of the court, parallel with the net, and 39 feet from it, are drawn the base lines, the ends of which are connected by the side lines. Halfway between the side lines, and parallel with them, is drawn the half court line, dividing the space on each side of the net into two equal parts, the right and left courts. On each side of the net, at a distance of 21 feet from it, and parallel with it, are drawn the service lines.

*The Balls.*—2. The Balls shall measure not less than 2 15-32 inches, nor more than 2 1-2 inches in diameter; and shall weigh not less than 1 15-16 ounces, nor more than 2 ounces.

*The Game.*—3. The choice of sides, and the right to serve in the first game, shall be decided by toss; provided that, if the winner of the toss choose the right to serve, the other player shall have choice of sides, and *vice versa*, or the winner of the toss may insist upon a choice by his opponent. If one player choose the court, the other may elect not to serve.

4. The players shall stand on opposite sides of the net; the player who first delivers the ball shall be called the server, and the other the striker-out.

5. At the end of the first game the striker-out shall become server, and the server shall become striker-out; and so on alternately in all the subsequent games of the set, or series of sets.

6. The server shall serve with one foot on the ground immediately behind the base line; the other foot may be anywhere except touching the base line or the ground within the court. He shall deliver the service from the right to the left courts, alternately; beginning from the right.

7. The ball served must drop between the service line, half-court line, and side line of the court, diagonally opposite to that from which it was served.

8. It is a fault if the server fail to strike the ball, or if the ball served drop in the net or beyond the service line, or out of court, or in the wrong court; or if the server do not stand as directed by law 6.

9. A fault cannot be taken.

10. After a fault the server shall serve again from the same court from which he served that fault, unless it was a fault because he served from the wrong court.

11. A fault cannot be claimed after the next service is delivered.

12. The server shall not serve till the striker-out is ready. If the latter attempt to return the service, he shall be deemed ready.

13. A service or fault delivered when the striker-out is not ready counts for nothing.

14. The service shall not be volleyed, that is taken before it has touched the ground.

15. A ball is in play on leaving the server's racket, except as provided for in law 8.

16. It is a good return, although the ball touch the net; but a service, otherwise good, which touches the net shall count for nothing.

17. The server wins a stroke if the striker-out volley the service, or if he fail to return the service, or the ball in play; or if he return the service or the ball in play so that it drops outside of his opponent's court; or if he otherwise lose a stroke as provided by law 20.

18. The striker-out wins a stroke if the server serve two consecutive faults; or if he fail to return the ball in play; or if he return the ball in play so that it drops outside of his opponent's court; or if he otherwise lose a stroke as provided by law 20.

19. A ball falling on a line is regarded as falling in the court bounded by that line.

20. Either player loses a stroke if the ball touch him, or anything that he wears or carries, except his racket in the act of striking; or if he touch the ball with his racket more than once; or if he touch the net or any of its supports while the ball is in play; or if he volley the ball before it has passed the net.

21. In case a player is obstructed by any accident, not within his control, the ball shall be considered a "let." But where a permanent fixture of the court is the cause of the accident, the point shall be counted. The benches and chairs placed around the court shall be considered permanent fixtures. If, however, a ball in play strike a permanent fixture of the court (other than the net or posts) before it touches the ground, the point is lost; if, after it has touched the ground, the point shall be counted.

22. On either player winning his first stroke, the score is called 15 for that player; on either player winning his second stroke the score is called 30 for that player; on either player winning his third stroke, the score is called 40 for that player; and the fourth stroke won by either player is scored game for that player, except as below: If both players have won three strokes, the score is called *deuce*; and the next stroke won by either player is scored *advantage* for that player. If the same player win the next stroke, he wins the game; if he



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lose the next stroke, the score returns to deuce and so on until one player wins the two strokes immediately following the score of deuce, when game is scored for that player.

23. The player who first wins six games wins the set; except as below: If both players win five games, the score is called *game all*; and the next game won by either player is scored *advantage game* for that player. If the same player win the next game, he wins the set; if he lose the next game, the score returns to *game all*; and so on, until either player wins the two games immediately following the score of *game all*, when he wins the set. But the committee having charge of any tournament may in their discretion modify this rule by the omission of *advantage sets*.

24. The players shall change sides at the end of every set; but the umpire, on appeal from either player before the toss for choice, shall direct the players to change sides at the end of the first, third, fifth, and every succeeding alternate game of each set; but if the appeal be made after the toss for choice, the umpire may only direct the players to change sides at the end of the first, third, fifth, and every succeeding alternate game of the odd, or deciding, set. If the players change courts in the alternate games throughout the match as above, they shall play in the first game of each set after the first in the courts in which they respectively did not play in the first game of the set immediately preceding.

25. When a series of sets is played, the player who served in the last game of one set shall be striker-out in the first game of the next.

26. In all contests the play shall be continuous from the first service till the match be concluded; provided, however, that between all sets after the second set either player is entitled to a rest, which shall not exceed seven minutes; and, provided, further, that in case of an unavoidable accident, not within the control of the contestants, a cessation of play which shall not exceed two minutes may be allowed between points; but this proviso shall be strictly construed, and the privilege never granted for the purpose of allowing a player to recover his strength or wind. The umpire in his discretion may at any time postpone the match on account of darkness or condition of the ground or weather. In any case of postponement, the previous score shall hold good. Where the play has ceased for more than an hour, the player who at the cessation thereof was in the court first chosen shall have the choice of courts on the recommencement of play. He shall stay in the court he chooses for the remainder of the set. The last two sentences of this rule do not apply when the players change every alternate game as provided by rule 24.

27. If a player serve out of his turn, the umpire, as soon as the mistake is discovered, shall direct the player to serve who ought to have served. But all strokes scored before such discovery shall be counted. If a game shall have been completed before such discovery, then the service in the next alternate game shall be delivered by the player who did not serve out of his turn, and so on in regular rotation.

28. There shall be a referee for every tournament, who shall have general charge of the matches. There shall be an umpire for each match and as many linesmen as the players desire. The umpire may act as linesman also. The umpire shall have general charge of the match and shall decide upon and call sets and also decide whether the player took the ball on the first or second bounce. The umpire shall also decide any question of interpretation or construction of the rules that may arise. The decision of the umpire upon any question of fact, or where a discretion is allowed to him under these rules, shall be final. Any player, however, may protest against any interpretation or construction of the rules by the umpire, and appeal to the referee. The decision of the referee upon such appeal should be final.

The court shall be divided between the linesmen, and it shall be their only duty to decide each for his share of the court where the ball touched the ground, except, however, the linesmen for the base line, who shall also call foot faults. The linesman's decision shall be final. If a linesman is unable to give a decision, because he did not see, or is uncertain of the fact, the umpire shall decide or direct the stroke to be played again.

### THREE-HANDED AND FOUR-HANDED GAMES.

29. The above laws shall apply to the three-handed and four-handed games, except as below:

30. For the three-handed and four-handed games the court shall be 36 feet in width; 4 1-2 feet inside the side lines, and parallel with them, are drawn the service side lines. The service lines are not drawn beyond the point at which they meet the service side lines.

31. In the three-handed game, the single player shall serve in every alternate game.

32. In the four-handed game, the pair who have the right to serve in the first game shall decide which partner shall do so; and the opposing pair shall decide in like manner for the second game. The partner of the player who served in the first game shall serve in the third, and the partner of the player who served in the second game shall serve in the fourth, and the same order shall be maintained in all the subsequent games of the set.

33. At the beginning of the next set, either partner of the pair which struck



out in the last game of the last set may serve; and the same privilege is given to their opponents in the second game of the new set.

34. The players shall take the service alternately throughout the game; a player cannot receive a service delivered to his partner; and the order of service and striking out once established shall not be altered nor shall the striker-out change courts to receive the service, till the end of the set.

35. It is a fault if the ball served do not drop between the service line, half-court line, and service side line of the court, diagonally opposite to that from which it was served.

36. It is a fault if the ball served do not drop as provided in law 35, or if it touch the server's partner or anything he wears or carries.

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## MOTORING: THE EVOLUTION OF THE AUTOMOBILE.

BY

CHARLES WELSH.

You can make all the motors run some of the time, and some of the motors all of the time; but you can't make all the motors run all of the time.

**W**HEN that famous old fraud, Mother Shipton, prophesied in the time of Henry VIII. that "Carriages without horses shall go," she was only prophesying after the event, for sails, windmills, and springs had been employed as means of power locomotion on common roads early in the sixteenth century. These early inventions, it is true, were rude, clumsy, and imperfect. Johann Hausted, of Nuremberg, for example, made a chariot about this time which was propelled by springs. It was capable of a speed of one and a quarter miles an hour! A veritable Nuremberg toy alongside of our modern machines with a record of seventy-five miles an hour.

But far-sighted men had believed in the possibility of automobility for hundreds of years. The automobile was foreshadowed by Roger Bacon in the thirteenth century, for he wrote, "We will be able to propel carriages with incredible speed without the assistance of any animal."

If we take a hasty glance along the stream of Time, noting by the way what the last four hundred years have brought forth in the shape of self-propelled carriages, we shall remark that the great Newton suggested propulsion by the reaction of a steam jet in 1680, and that Father Verbiest, a Jesuit missionary in China, actually constructed a machine so propelled in 1665. The celebrated engineer, Pupin, built a model for a road carriage to be propelled by an engine with a cylinder and piston, and as soon as steam began to come into practical use the idea of self-propelled vehicles became very general, and many busy brains set to work on the problem.

The great Frenchman, Cugnot, who constructed the earliest practical power locomotives for road use during the years 1763-1771, may almost be called the father of automobilism. His first carriage was