

TWIST LAWN-TENNIS SERVICE

THE famous twist service of Messrs. Whitman, Davis and Ward has been so frequently under discussion as to have created much curiosity concerning its mysteries. Particularly is this true since the excellent showing of Messrs. Davis and Ward in the English Double Championship recently. Therefore we give space to the explanation of Mr. J. Parmley Paret, editor of *American Lawn Tennis*, of this now famous service: "This service is simply a scientific development of the common underhand twist strokes adapted for overhead play with the additional speed which has made the new stroke so formidable. It is a common error to call these deliveries reverse twists, for as a matter of fact, the only reverse twist overhead service in use among the experts is that delivered by Champion Whitman, while the twist service used by Davis, Ward and Alexander has all the natural out twist.

"Ever since the early days of baseball, the scientific theory of curving a ball in the air has been well understood. The top of a carriage wheel travels faster than the bottom, because its axis is moving ahead all of the time, and in the same way the friction on the side of a ball which is twisting on its own axis is greater on the side which is going fastest through the air—the right-hand side in a right twist delivery and vice versa. The rougher the surface of any spherical body the more it will curve in the air, because the friction becomes greater against the particles of the air itself. The rough felt covering of a lawn-tennis ball causes more friction than a leather covered baseball, and consequently the tennis ball curves more in the air.

"The secret of success in making this new twist service is not to make the ball curve so much to one side or the other, as to curve downward in its flight, like the 'drop' of a modern baseball pitcher. It is necessary to make a tennis ball drop quickly after crossing the net, if it is to be served with much speed and still strike within the boundary of the service court. To accomplish this, the ball must be hit on top as much as possible, and the secret of the new twist service lies in reaching over the ball and striking it from above as well as one side. The racket strings are drawn across the cover of the ball as much as possible, the ball taking the strings near one edge of the frame and leaving at the other side. To do this, a very quick sidemotion is required, and it is this that gives the ball its rapid spinning motion.

"It has been a mystery to many why a tennis ball should bound in the opposite direction from its curve, but if one will apply the principle of the 'English' in billiards he will understand at once the reason. In the overhand out twist, as served by Ward and Alexander, the ball spins sharply on its own axis, combining the effect of right-hand English and the 'follow' shot in billiards; in other words it spins exactly like a billiard ball when hit for a follow shot with a right English. It curves to the server's left in seeking the line of the least resistance, which is a common rule in all physics, because of

the greater friction on its right side, and it curves downward in its flight because of the greater friction on its top side.

"Instantly the ball strikes the ground it breaks to the right, because the spinning motion drags it that way when it comes in contact with the ground, just the same way as a billiard ball with right English rebounds to the right when it strikes the cushion of the table. Thus we have the double motion in this new twist service, which has puzzled so many who have played against it. The reason why its effect has been greater with American than with English balls is because the surface covering of the American ball is rougher than that of the English and the resistance in going through the air becomes greater in consequence. The ball gets a sharper twist from the racket because the rougher cover makes it cling longer to the string.

"The service used by Whitman has the reverse twist, his racket moves from his right to his left, the ball curves from left to right and breaks again to the left as it leaves the ground. Davis's service has the same curves and much the same effect as Whitman's, but Davis reaches very much further over the ball, hitting it faster and making it bound deeper. It is an out twist and not a reverse twist, however, because Davis plays with his left hand and the racket travels away from his body, not across it. The service used by Ward and Alexander is an out twist made with the right arm, the racket traveling away from the body, to the server's right, the ball curves from right to left, and breaks sharply to the right again after leaving the ground.

"In Whitman's case the racket travels across in front of his body and the tendency in making this reverse twist is to throw the server off his balance, and to make it doubly difficult for him to run into the net to volley the first return. In case of the out twist it is just the reverse and Ward is said to have invented this service in an effort to get the impetus of the racket to help him get in motion quicker after serving, in his effort to reach the net for the volleying position.

"In each case where this out-twist service has been successful, the server bends very far backward and drops his racket down far behind his back before making the stroke. In each case, too, he reaches well up over the ball, and the more he hits it on top, the more speed he can secure and still make the ball drop enough to fall inside of the service court. There is a tendency, also, to ease up slightly on the inside edge of the racket so that the strings will follow the ball longer and give it a sharper twist in making the strokes.

"The keynote to success, however, lies in hitting the ball well on top, with a very sharp twist, the ball rolling across the entire face of the strings before it leaves it, and in striking very much harder than would be possible to bring an ordinary service within the court."