

THE OBJECTIVES OF THE GOLF BALL STUDY

A Restatement
of the USGA's Purpose

GOLFERS who have followed the game over a period of years probably will agree that there has been a long-term increase in the distance a golf ball may be struck and that any new materials and improved production methods in future would tend to continue and perhaps accelerate this trend unless the present controls exercised by the USGA are adequate.

An increase in distance would, of course, injure the game by minimizing the architectural values of courses, and the USGA feels a primary responsibility to protect its member clubs from the necessity of having to purchase additional land, redesign holes and pay increased taxes and maintenance expenses.

Since 1942, the distance factor has been governed by the paragraph of Rule 2-3 which states: "The velocity of the ball shall be not greater than 250 feet per second when measured on the USGA's apparatus . . ." This apparatus, completed by the Armour Research Foundation in 1941, is designed to hit golf balls with a mass moving at a definite velocity and to measure the resultant velocity with which the ball leaves the driving face.

While there is no question as to the efficacy of this apparatus in measuring initial velocity, it may be that a simple test of initial velocity is inadequate. The characteristics of the clubhead and shaft, the speed and angle at which the club is swung, the coefficient of restitution of the ball, aerodynamic forces which come into play during flight and other factors presumably influence distance. Their relative importance is not known precisely, however.

In order to obtain the best possible answers to these and corollary questions, the USGA a year ago engaged Arthur D. Little,

DO YOU KNOW YOUR GOLF?

(Answers to questions on page 10).

1. (a) Lloyd Mangrum; (b) Miss Pam Barton.
2. (a) Snead; (b) Berg; (c) Locke; (d) Patton.
3. (a) Mich.; (b) N. Y.; (c) Okla; (d) La.
4. (a) False (the weight must not be *more* than 1.62 ounces); (b) true; (c) false; (d) false. They are limited to the British Isles.
5. Yes. See Rule 33-1c.
6. No. The size was first mentioned in the 1893 code of the R. and A.
7. 5¼ inches.
8. The Walker Cup, instituted in 1922.
9. Don Essig, III, the Public Links title; Miss JoAnne Gunderson, the Women's Amateur.

Inc., a research firm of Cambridge, Mass., to make a comprehensive study of the ball with two objectives:

(1) To develop an improved standard or rule to control the distance the ball may be struck, and

(2) To develop a simpler and more practical control test of the flight of the ball than the present velocity test which requires unwieldy and expensive apparatus now set up in "Golf House."

Research scientists have worked on the problem for about a year and during the recent Amateur Championship recorded practice strokes of some of the prominent players with a specially developed camera which made 9,000 separate pictures a second. Subsequently, articles on the project appeared in newspapers and magazines.

One effect has been some premature publicity which over-emphasized certain

details and distracted attention from the basic objectives of the study. Therefore the purpose has been restated here almost exactly as it was phrased last January by Charles L. Peirson, of Boston, Mass., in his annual report as chairman of the USGA Implements and Ball Committee.

In the meantime, the scientists are reviewing their studies, and the next, or February 1958 edition of the USGA Journal will publish their findings.

The original golf ball, called the feather ball, consisted of a sewn spherical shell of leather stuffed hard with feathers. In 1848 a smooth sphere of gutta percha was introduced and gradually replaced the feather ball. The guttie was much more lively than its predecessor, but it suffered from erratic flight characteristics. A scientific Scot soon observed that an old ball would fly truer than a new ball. This property was correctly attributed to nicks and scratches in the surface of the ball. Balls that had a rough surface were produced as a result of this observation.

About 1885 Prof. Peter Guthrie Tait, of Scotland, a noted mathematical physicist

and an ardent golfer, became interested in the flight characteristics of golf balls. Tait observed that the longest drives were those that began with a low trajectory and that balls frequently remained in flight as long as seven seconds. Both of these observations contradicted Newton's laws of motion, which predicted that maximum carry would be achieved for greater initial angles of elevation and that the time of flight could not in any case exceed three or four seconds. Tait showed that these discrepancies could be resolved if the effects of backspin were included. Backspin coupled with the viscous nature of the air produces lift, much as is the case in the flow of air past an aircraft wing. Lift causes the ball to soar above the Newtonian or gravitational trajectory and thus carry farther and remain in the air for a longer period.

The familiar dimple marking was invented by an English mechanical engineer who observed the flow of cigar smoke past the bramble ball and concluded that a ball with better aerodynamic properties could be produced if dimples were substituted for the raised bosses on the bramble.

USGA COMPETITIONS FOR 1959

<u>Championship or Team Match</u>	<u>Entries Close</u>	<u>Sectional Qualifying Rounds</u>	<u>Dates of Event</u>	<u>Location</u>
(a) Walker Cup Match	—	—	May 15-16	Honourable Company of Edinburgh Golfers Muirfield, Scotland
Open	May 13	June 1	June 11-12-13	Winged Foot Golf Club Mamaroneck, N. Y.
Women's Open	June 11	None	June 25-26-27	Churchill Valley Country Club Pittsburgh, Pa.
Amateur Public Links	*June 4	†June 21-27	July 13-18	Denver, Colo. (course to be determined)
Junior Amateur	July 1	July 21	August 5-8	Stanford University Golf Course Stanford University, Cal. (to be determined)
Girls' Junior	July 31	None	August 17-21	
Women's Amateur	August 6	None	August 24-29	Congressional Country Club Washington, D. C.
Amateur	August 12	Sept. 1	Sept. 14-19	Broadmoor Golf Club Colorado Springs, Colo.
Senior Amateur	Sept. 2	Sept. 22	Oct. 5-10	Memphis Country Club Memphis, Tenn.

Dates entries close mean last dates for applications to reach USGA office, except in the case of the Amateur Public Links Championship. For possible exceptions in dates of Sectional Qualifying Rounds, see entry forms.

Re Amateur Public Links Championship:

*—Entries close with Sectional Qualifying Chairmen.

†—Exact date in each Section to be fixed by Sectional Chairmen.

(a) Walker Cup Match: Men's Amateur teams—Great Britain vs. United States.