Author’s Closure
by A. J. Williams, Jr.

For discussion of Joe Dante and Len Elliott

These discussers, Dante and Elliott, in their second paragraph, state that the conservation of angular momentum accounts for the club-head catching up with the hands at impact. The author agrees with this and his last full paragraph on the first page of the paper is his crude description of this action. However, something more is required to explain “an obscure influence which brings the club head from a position trailing the shaft (for the greater portion of the down swing) to a position abreast of the shaft at impact.”

These discussers, in their third paragraph, suggest that keeping the Q-bend muscles taut all through the swing may be another way of advocating a “strong left arm.” The author has difficulty commenting on this very interesting suggestion because he does not know exactly what is meant by the term “strong left arm.”

In order to avoid being entirely noncommittal he wishes to call attention to the wrist bend shown in photo 12 of Fig. 1 in the paper and the bend of the left wrist in Fig. 31 A of the discussers book, which is reference [3] of the paper. In both cases there is a significant amount of positive Q-bend. Perhaps this is enough evidence to suggest that the discussers and the author are in agreement that there should be a significant amount of positive Q-bend at some instant prior to impact.

For discussion of A. J. Cochran

The discusser, Cochran, is not surprised that the maximum amount of P-bend is dependent on the amount of Q-bend. He mentions the tightness of the finger grip as another factor. In collecting the data for Fig. 4 every effort was made to maintain a constant finger grip. In photo 6 of Fig. 1 there was a force on the little finger tending to unwrap it from the shaft, but this was not permitted. The force on the little finger and its reaction was increased but its position with respect to the shaft was not allowed to change.

The discusser suspects that wrist bending occurs in response to external (inertial) forces, and that very little in the way of conscious effort is necessary or desirable. The author agrees that inertial forces are important in the downswing. They keep the left arm and the golf club in the swing plane and they pull the club into line with the left arm thus reducing to zero the shaft-to-arm angle and at the same time the P-bend and the Q-bend. But the author believes that the sequence in the actions of the wrist, as shown by a path in the P-Q plane of Fig. 4, and as determined by the tense Q-bend muscles, is also important, especially in turning the shaft counterclockwise with respect to the swing plane so the head of the club can be abreast of the shaft at impact (Fig. 5).

The author is very appreciative of the comments on the Q-bend recorder.

For discussion of Ralph M. Scorpio

The discussion of Scorpio indicates that he got the message in the paper. It is only fair to state that he had a live demonstration, so it cannot be stated, for sure, that the paper was clear enough that he got the message from the paper.

For discussion of T. W. Jenkins, Jr.

The author appreciates the discussion of Jenkins and specifically the sentence, “The centrifugal force determines the swing plane, and the tensed Q-bend muscles operating on the wrist fix the position of the club head with reference to this swing plane.”

For discussion of John B. Lynam, Jr.

The discussion of Lynam comes from a man who can really swing a golf club and can successfully teach others how to swing a golf club. He is a man of few words so his words of discussion are greatly appreciated by the author.

Optimum Boundaries for Elliptic Systems

Y. HARI

The author is indebted to Dr. R. E. Goodson of Purdue University for preparation and suggestions regarding the paper “Optimum Boundaries for Elliptic Systems” Vol. 94, Series G, No. 2, which was published in this Journal. Further, the author acknowledges that Dr. R. E. Goodson’s name should have been added to the paper as co-author. Dr. R. E. Goodson’s name was left out as he was on sabbatical leave from Purdue University and not available for comments on modifications made in the paper by the author and the author neglected at that time to include his name. This acknowledgment is made to give due credit to Dr. R. E. Goodson for this research work.


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