

1968, March 8

Mr. C. P. Butler,  
738 Sequoia Ave.,  
San Mateo, Calif. 94403

Dear Mr. Butler:

It is not at all in the field of light, but there is another little experiment in physics which has always puzzled me. It is not in the books I have read, but was first shown to me by a sort of off-beat amateur astronomer, who was arguing that the phenomenon was applicable to the moon (but just forget that).

If you place a football on the ground in its normal position and twirl it vigorously, it will shortly rise up on one end and continue spinning thus. A smoother surface like a hard floor is even better.

The same thing can be done with a pecan on a floor or table. Give it a vigorous twist in its stable configuration and it will rise up and spin on one end.

Now I am not at all troubled about the conservation of energy, as I am sure this is all taken care in the changing rates of spin or centrifugal force, but my question is: what initiates this unexpected change in the axis of spin? What impels the object to raise its center of gravity? The only answer I could ever think of was that a sort of precession is involved, a gyroscopic action.

The same thing or something similar can be observed if you twirl a heavy class ring on a smooth surface with the "signet" or front, thick side down. It will shortly turn over and spin with this side up, rotating on the thin back side of the ring.

As you seem to be a man of many parts on things scientific, I would value your comments or reactions.

Sincerely,