SPEED OF GAME BIRDS

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Diagrams by the Author

No amount of mechanical ability to handle a gun, such skill as might be acquired in trap shooting, will ever make a crack field shot out of the man who cannot estimate distances accurately, or who would not know where to hold if he did. In treating the subject of speed of mark, distance of target, and amount of lead, the writer feels constrained to admit that no theoretical knowledge can take the place of experience—a world of experience. The knowledge that comes only with long years of shooting is something that is never received on a platter of gold, but is bought and well paid for by the years that have gone by; it is power that was stored by the water that has gone past the wheel forever.

It is well that this is so, for if youth, with its irrepressible vitality, its muscles of iron and nerves of steel, might magically have the wisdom of age also, there would be no use for the veteran in this world—he would have to be Oslerized to make room. The best the author can do is to give such advice as may prevent the water from slipping by without turning the wheel.

Given the velocity of our projectile, the speed, distance, and angle on which our mark is traveling, and it is easy to work out the exact spot at which the aim must be taken in order to connect with the target. But all our theories will be much modified and negatived by the different styles of shooting that men have acquired. Indeed so many factors have a bearing that it is rare for theory and practice to agree, and it is seldom that two skilled shots can be found who will not have divergent views about where to hold.

Just how much the mathematical lead will have to be changed by the shooter's manner of swinging is something that everyone will have to decide for himself. The novice who manages by the rapidity of his swing to cut theoretical lead in half is on pretty safe ground. The scientific lead is given here merely as a foundation for those who have not yet built a shooting structure and theory of their own.

The following table gives either the estimated or timed speed of flight of some of our common game birds, taken when they are in full plumage and power, after having flown such a distance as to have acquired full momentum. It may be noted that birds of the order of quail and grouse are much more uniform in rate of progress than wildfowl. Nature did not give the grouse family such wing powers as the migratory birds, the one style of flying they have developed giving a very regular velocity.

It might be taken as almost axiomatic that the greater the strength of wing possessed by any bird, the more will his speed vary with his humors and needs. Some hawks can stand still in the air, but they can also cut through it faster than anything that flies; the king bird ordinarily flies slowly, but he can dart like a flash of light when he wishes.

The variations in flight speed of quail and grouse can be ascribed to wind and atmosphere rather than to the will of the bird. One of them might fly past you, running a hazard of both barrels, without accelerating his wing strokes a particle, though doubtless he is as much frightened as any other bird. As much cannot be said of the duck tribe who sprint or loiter as the occasion demands, always appearing able to let out another link or two when danger is pressing.

The velocities here given are taken in feet per second rather than miles per hour, which is less readily comprehended or applied by the gunner.
Snipe, quail, chickens, and grouse are jumped, killed when hovering over depressions. Moreover, many birds like coys, or shots while unsuspicious of danger and moving slowly; enough of such shots are the rule to keep the tyro in good heart. Moreover, many birds like snipe, quail, chickens, and grouse are generally killed before they have attained full speed, perhaps ninety per cent of such birds falling before they have reached normal flight velocity. Generally speaking, upland birds are not shot while passing the gun at right angles, but are going straight away, quartering, or twisting. It follows that in the fields our gravest shooting problems are other than reckoning speed of flight, but on the marshes our ability to calculate distances, both horizontal and vertical, has full play.

As a consequence of this, the work of the men who follow either of these branches of sport, we might say that the sportsman of the fields has much to unlearn ere he can perform creditably upon the web-feet, and the man of the duck boat has only a foundation for partridge shooting skill. Having learned to kill quail we can no more double up a whizzing canvasback than a man can play golf because he has...
learned croquet, or a ninety per cent clay saucer breaker can hit a jack snipe.

The figures given below are based upon a shot charge having a mean velocity over a fifty-foot course of one thousand feet; over a one-hundred-foot range, of nine hundred feet; and for the distance of one hundred and fifty feet, eight hundred feet a second. Of course these calculations for shot velocity are only approximately correct, since they would alter with the size of the pellets, the larger shot maintaining a higher momentum at the longer ranges. Then, too, the initial velocity of the load might be greater or less than that given. Nevertheless, as it would be obviously impossible to work out the problems to fit every different charge, without taking up the space of a book, these will do as well as any.

**Distance to Hold Ahead**

No allowance has been made for the time required to pull trigger, the action of the lock, or the time necessary for the charge to pass from breech to muzzle, these being variable quantities that would only render the matter more complex. Mathematical lead, as here given, means simply the distance the bird would fly at his stated rate of speed while the shot were reaching him at the velocity mentioned.

A snipe, curlew, or plover, flying at the rate of sixty feet a second, would require a lead of two and one-half feet at fifty feet; five and five-ninths feet at one hundred feet; and nine and three-eighths feet at fifty yards.

A quail, prairie chicken, ruffed grouse, or mallard, covering space at a speed of seventy-five feet a second, would have to be led three and three-quarter feet at fifty feet; eight and one-third feet at one hundred; and fourteen feet at fifty yards.

A wood-duck, widgeon, or pintail flying ninety feet a second would necessitate a lead of four and one-half feet at fifty feet; ten feet at one hundred; and at fifty yards sixteen and seven-eighths feet.

A gadwell, greenwing, or wild goose traveling one hundred feet a second would call for a lead of five feet at fifty feet; eleven and one-ninth feet at one hundred; and eighteen and three-quarters feet at fifty yards.

A bluewing teal, canvasback, or redhead, passing at the rate of one hundred and twenty feet a second would need a lead of six feet at a distance of fifty; thirteen and three-ninths at one hundred; and at fifty yards twenty-two and one-half feet.

Should a canvasback or bluewing flash by at the rate of one hundred and fifty feet a second, which they doubtless sometimes do in a wind, the lead for fifty feet would be seven and one-half feet, that for one hundred, sixteen and two-thirds; for fifty yards twenty-eight and one-eighth feet.

Granted that a hawk is able to fly two hundred feet a second, as stated, this means that over a fifty-yard range the shot charge would travel but four times as fast as the bird, and the lead required to connect with him at the distance would be thirty-seven and one-half feet. Even in the case of many of the ducks the shot have a velocity barely eight times as great as the target. Bearing this in mind, the need of correctly estimating distance and lead may strike the reader with new force.

It should be noted that these allowances for lead are all theoretical. The average experienced man, who fires with a rapidly swinging gun, would cut the given lead in half, and many expert wildfowlers would do better than that.

It might be added here that any apparent lead greater than ten feet becomes pretty much guess work. I have myself killed teal in a Minnesota gale by holding what I considered twenty feet ahead of them, but the feat was performed so seldom as to be readily recalled. It should be remembered that consciously giving a lead of twenty feet means really a much greater allowance if the gun is swinging true and fast. Naturally difficult shots like those are the "home runs" of wing shooting.

It is hardly necessary to state that all the calculations here presented call for the bird's passing at right angles to the gun, any other angle of flight obviously changing the lead.
Within shotgun range it is a comparatively easy matter to judge distances along the ground, especially stationary objects of recognized dimensions. Even birds awing that fly low nearly always pass a tree or something else that will afford us a basis for calculations. But with birds of unknown size, passing overhead, the matter assumes different proportions.

As previously stated, in upland shooting, where the birds generally rise near us the matter of estimating distances need not concern us seriously. To be sure some shots will be missed through an incorrect lead due to badly judged flight, but such chances will not occur often enough to make a great difference in the size of the bag.

When wildfowl are in question, however, the subject is one that cannot be studied too closely. Ducks frequently maintain a line of flight so regular that striking them could present no great difficulty if we knew how far they were away from the gun and exactly what lead to give them. Nine misses in ten upon the marsh are caused by faulty lead, which in turn must be attributed to poor judgment of distance or speed of flight.

Expert gunners estimate the distance of their mark, first, by knowing the kind of bird that is coming in and the size that it should appear at a given time. This makes it imperative that we should always be able to recognize the species of fowl that is approaching, be it teal, mallard, or pintail, for we cannot reckon nearness by size unless the size is well known.

Secondly, the closeness of wildfowl can be approximately figured by keenly observing their markings. The shooter may say that he knew the bird was within range because he could see the white on its cheeks or the bars on its wings. The third method is to observe the apparent time required for the fowl to pass the gun. A bird that is well out will seemingly be much longer in passing than he would if he whistled by our heads.

One of the first things for a wildfowler to learn is to recognize the kind of duck which is approaching while it is yet at a distance. Until he can do this simply by the manner of the bird’s flying he cannot hope to do a great deal of execution. This is true for more than one reason, but the particular one which concerns us now is the necessity for judging the bird’s range by its size and appearance.

The novice quickly comes to know that a mallard shows markings about as far as he can be killed, but if he is looking for trimmings of chestnut, white, and green, and a little black teal whizzes by at half gunshot he will never believe that it was within reach.

Nevertheless when experience has taught us to recognize at sight the different species of fowl there is no better key to the mysteries of unknown range than the markings of the birds. So many yards away we can distinguish the drakes from the ducks. A certain nearer approach and the chestnut and white of the mallard drake’s breast no longer blend. Close up the very eyes of the bird may be seen, or the curl upon his tail, and then even the tyro knows that his mark is within easy reach.

Probably judging the distance of a wildfowl by his markings is the mode most commonly practiced. It is usually very reliable, though to be sure atmos-
pheric conditions would have an influence. In rainy or foggy weather the colors might blend when the bird was nearly on top of you. And, by the way, estimating the distance or size of the flying game in a fog is almost impossible.

The apparent size of the mark also gives the gunner a very good line on its vicinity to the gun. When the bird looms up as big as a balloon you know that he ought to be within gunshot. It is here, however, that a man’s eyes often deceive his reason. After killing a mallard at forty yards, he permits a teal at thirty-five to escape because he fully believes it is out of range. In like manner, impressed with the appearance of the ducks, an old Canada honker will not seem to be half as far away as he really is and a lot of forbearance is needed to keep from cutting loose while he is yet two gunshot lengths off.

A safe plan with the big bird is to let him come just as close as he will if he drops into the pit. As a matter of fact, that is a pretty good plan with any kind of a waterfowl larger than a teal, for almost invariably they are not so close as they appear to be.

With very small birds the opposite might be true, as for example a quail at forty yards looks a long distance off; many would pronounce him from fifty to sixty yards away. This accounts for most of the sixty-yard shots on quail that we read about, the bird really being under forty oftener than not.

Correctly estimating the distance of the mark will not avail us much unless we can at the same time closely calculate the speed of flight. The lead that would kill mallards right along will miss every teal that wings past us; or if by accident the beginner first learns to connect with the teal, he will be disgusted at missing the slow flying greenheads and pintail while apparently hanging right over his head.

Indeed, the expert gunner is often dismayed to find that he cannot change his swing to adapt it to a slowly moving mark after becoming accustomed to a speedy one. He perceives at once that he should do so, but shooting instinct and habit betray him. It is often laughable to see a crack shot lead a rabbit three feet too much when bunny hops up among the scattered quail.

The ordinary manner of estimating the lead for a bird is not in feet, as might be expected, but in lengths of the bird. For instance, at fifty yards ten feet appears a very short distance, but a bird that is known to be twelve inches long seems very small also; nevertheless, by taking ten of his lengths we can safely assume that we are ten feet ahead of him. This rule, of course, pertains to any distance, while by attempting to work in feet we will find that the eye will deceive us with every varying range.

Not one inexperienced shot in a dozen can come closer than two feet to estimating the distance apart of two poles at fifty yards, not to mention measuring off ten feet in the air with nothing to serve as a guide or comparison. Despite this, the novice may guess off ten lengths with sufficient accuracy to insure a kill.

After a time the final dependence of every veteran shot comes to be shooting habit. He glances at the flying quarry, swings upon it, and pulls when he feels he is right, with deadly results. The feeling of where to hold becomes so strong that no manner of reasoning or instruction would change his point of aim. This is not from any form of instinct, but simply because he swung so and killed many times before.

He finally does it all without second thought, or first thought either, and should you ask him how much he led he wouldn’t remember, either feet or lengths. Perhaps he might declare that he didn’t lead at all, or barely shot in front; this because his mind was upon other things, as in swinging steadily and letting off at the exact time he felt was right.

Notwithstanding this style of shooting can by no means be safely imitated by the novice. Humanity is so constituted that it must learn things slowly, through a process of reasoning, and reason only can lay a sure foundation for the so-called shooting instinct. If there is any royal road to success in wing-shooting the writer has never known anyone to strike it. Practice and study, practice and study; you will never become perfect, but you can become expert.