SPEED OF A SHOT

inding the Velocity of a Missile a Simple Matter.

EASURED BY A PAPER DRUM.

he Whirling Cylinder Registers the Projectile's Flight With Minute Accuracy at Any Desired Distance. Wing Shots and Shot Charges.

Persons at all interested in gun firing any kind, whether of the revolver rifle or of heavy ordnance of any nd, occasionally come upon the term nuzzle velocity" and velocities of the issile at stated distances.

"How can anybody tell how fast a llet is traveling when it leaves the uzzle of a weapon?" is a likely comnt on the part of the layman.

As a matter of fact this approximate locity of the missile may be one of easiest of determinations to make. In the first place, a drumlike cylinder made of fixed diameter and of sufficiently stiff paper to allow of its revving rapidly on a spindle. Using a linder of small circumference, it is cessary that the speed approach 00 revolutions a minute. These revtions are produced by electric pow- and the count is made by an exact chanical register.

The gun is placed securely at the reired distance from the drum and is hted directly at the center of the linder, which is spinning at so ny rods, even miles, a minute, as circumference determines. With drum's speed adjusted an electric rrent discharges the weapon, the llet striking the center of the drum measured from top to bottom.

The reader understands that with the m stationary the bullet would pass ectly through it on the line of its meter, coming out on the other side th scarcely a shade of impediment. th the drum's periphery whirling at rate of 2,000 revolutions a minute its diameter only a fraction more n a foot this would mean a rate of 00 yards in sixty seconds. Thus in fragment of a second necessary for bullet to enter one side of the pa- drum, cross it and out at the other the opposite side of the drum uld show considerable deviation m an exact diameter of line of pase.

is this space of deflection shown ide the further rim of the drum that sed for the computation of velocity the missile. The speed of the cylin- may be computed to the ten thoudth part of a second if necessary the lineal distance run in that time charted in perpendicular lines on inner side of the paper. At whatr line the bullet penetrates outward registers its time in crossing the meter of the cylinder. If it has red the ten-thousandth part of a nd for the bullet to fly one foot its zle velocity to the mile may be puted by any schoolboy. By the e process, too, the bullet's velocity 00 yards or 500 yards may be dened.

ears ago before wing shooting had me an art the farmer with his zle loading shotgun and charge of k powder would shoot directly at a goose or duck in full flight. He ved a theory of his own as to the oming bird, holding that the heavy st feathers "turned" the shot. He ed until the bird had passed him n, firing directly at it, he could g down his quarry.

t it was not because the bird was vulnerable, coming breast on. fact was that it efiw over his ge of shot. Before he could pull trigger and the hammer fell on percussion cap and the comparay slow black powder could be ig- and exploded, sending the shot nty-five or thirty yards, the bird flown yards perhaps beyond its ion when the fowler first touched trigger. But firing directly at the after it had passed the shot e had a strong tendency to drop flew, and the bird flying on a line "got in the way" of the e.

day the modern nitro powders are ensely quicker than was the old gunpowder, yet it has been an neering problem to determine just fast and in what line a charge of will travel. In this determinathe revolving drum device has n several important facts which been taken in connection with speed of individual game birds the effects of windage on a shot e.

t most important fact as to the of shot from a modern shotgun at at forty yards the shot are ng out" for approximately fifteen While the leading pellets in the have greatest velocity and killpower, at this distance even the ng pellets are of sufficient force l.

this has led to the modern prace of the fowler to reckon with the of his shot, the speed of the the influence of the wind in ting" the charge, and out of establishes facts to "lead" the sufficiently to kill it rather than and cripple it.—Marvin Holton icago Tribune.

The Other National Game.

. Galey (as Galey arrives home a. m.)—Well, what in the world ded you to come home at all? —The game was called on ac- of daylight, my dear.—Puck.

red does not cease by hatred at time. Hatred ceases by love. is an old rule.—Buddha.

PERFECT STEEL BALLS.

They Have Never Yet Been Made, Even In the Laboratory.

One of the needs of the day is a perfectly spherical steel ball, and yet it has never been made even in the laboratory, much less in the shop for commercial uses. When we consider the importance of ball bearings for automobiles, motorcycles and other machinery the imperfections in steel balls must appeal to all as of the greatest moment. Of course we make pretty good steel balls, which could not have been manufactured a few years ago. So far as the eye can discern, they are perfectly spherical, too, and ordinary measuring instruments will not be able to detect any difference in them, but nevertheless they are not perfectly spherical.

A steel ball for automobile bearings must be perfect within .0001 inch, and they are made even more perfect than this, but mathematical perfection in this respect seems to be almost as illusive as squaring the circle or discovering the perpetual motion machine.

When the steel ball was first used in the bearings of bicycles it was a very imperfect sphere. It was not called upon to bear any great load, and the velocity was not great. At the best the load on it was not more than 200 pounds, and at the rate of sixty miles an hour the revolutions were not more than 720 per minute. Compare that with the load and velocity of the modern ball bearings of automobiles. Frequently the load approximates a thousand pounds and the velocity is anywhere from 800 to 1,200 revolutions. The small steel balls must take the maximum load of the car and pass it on to others without binding or catching. A slight imperfection in any one ball would cause trouble. In fact, it is impossible to use balls with any appreciable variation in size from one another, and the more nearly round they are the better the results.

Steel balls are not only made more perfect in shape than ever before, but they are harder and tougher. As there is a tendency to flake, only special steels can be used in their manufacture, and these tough, hard steels are all the more difficult to work with to secure perfect roundness. The chrome steel, of which most balls for bearings are made, is one of the most difficult of steels to cut or shape, and the work of handling it has developed special tools and machines made of even harder material.

While we have not yet made the perfectly spherical steel ball and perhaps may never succeed, the point of perfection reached is little short of wonderful. The approximately perfect steel ball is a matter of vital importance wherever machines and machinery are made and used. The application of the ball bearing system is extended to new lines of industrial use each year, and builders of all kinds of apparatus are taking advantage of the perfection reached by the manufacturers of these little spheres of tough steel.—Harper's Weekly.

Dancing In Washington's Days.

It was a dancing age. None was too old or too dignified to join in the pastime. We have it on the authority of General Greene that on one occasion Washington danced for three hours without once sitting down. Patrick Henry would close the doors of his office to betake himself to dancing or fiddling, and Jefferson dearly loved to "rosin" his bow for a merry jig. The story is told of him that once when away from home he received news of the burning of his father's house. "Did you save any of my books?" he asked of the slave who brought him the tidings. "No, massa," answered the negro, "but we saved the fiddle."—Maud Wilder Goodwin in "The Colonial Cavalier."

Ten Out of Five.

It was in an ideal seacoast town of Maine, to which they had fled for a lazy two weeks, that they found him, one of those "natives" with a large stock of undeveloped wit.

They were out gunning with the native as their guide. A flock of five birds flew over. Raising his gun, he took aim and fired. All five fell to the earth, and they were loud in their praises of his skill.

"That ain't nothin'!" said he contemptuously. "If I'd hed my other gun along I'd 'a' done better than that."—Metropolitan Magazine.

Arrows and Big Guns.

In the days of mailed knights and battleaxes there was safety at a distance of 400 yards. That was about as far as the best archers could shoot an arrow. Neade, a famous archer under Charles I., states that the ordinary range of the bow was between 320 and 400 yards, though it is on record that one man was shot a distance of 463 yards with the wind. Compared with this is the latest naval gun with a range of fifteen miles.

Hotter Than He Thought.

The boy whose business it was to answer the telephone rushed into the room of the senior partner.

"Just got a message saying that your house was on fire," he said.

"Dear me!" returned the senior partner in a bewildered sort of way. "I knew my wife was pretty hot about something when I left home this morning, but I didn't think it was so bad as to set the house on fire!"

Greatly Changed.

"Have you seen Miss Beanpole since she inherited a fortune?"

"Yes. She is greatly changed."

"How?"

"Well, she used to be frightfully skinny."

"And now she's divinely slender."—Toledo Blade.

FOOD OF THE MEXICANS.

Frijoles and Tortillas the Main Diet of the Poor.

People at home in the "states" may think the food of the Mexicans meager. It is comprised chiefly of frijoles and tortillas, supplemented by the fruit of the cactus when in season.

Tortillas are thin little cakes made of corn boiled with lime, and these serve as the chief food. Every house has a metate, a sort of stone trough, which rests on the ground, and on this the corn is crushed to a paste and then patted into thin round cakes and tossed on a clay griddle to cook. Don't think as you ride down the street that in every house a child is being spanked—it is only the patting sound made by the women as they deftly shape the tortillas in their hands.

The lime in which the corn is softened is said to account for the very strong white teeth of the natives. Frijoles are, of course, beans and after being boiled a long time with onions, chili and other savory bits are put into boiling lard for their final flavor. Knives and forks are not needed where a tortilla can be folded in the middle and used as a scoop for the beans. These two articles of food form almost the entire diet of the poor.

All food is very hot, from the chili put in it, and one doesn't realize the peculiar flavor that cinnamon will give to many dishes until he has eaten it in everything, from coffee to ice cream. While pulque, the fermented juice of the maguey, our century plant, is the national drink, if a peon is very drunk it is probably due to mescal or tequila, two stronger drinks made from the same maguey.

Cooking is generally done over a few pieces of charcoal on the ground. Often have I seen women cook an entire meal over as little charcoal as one hand can grasp.—Los Angeles Times.

LURE OF DANGER.

Tragic Recklessness of a Trio of Fire Fighting Heroes.

Former Chief Croker of New York in the World's Work says that, although the whole fire service is founded on the principle of obedience, it is almost impossible to drag a man from danger when his battle blood is up.

"In 1905," he says, "I lost three good men in a big warehouse fire in Thirtieth street through recklessness inspired by this spirit. The building had been pretty well gutted, and one of the walls was getting shaky. Directly under this wall were three men from an engine company hugging a 'lead' of hose, their helmets down over their eyes and playing their water on the flames, which almost singed their faces. I saw their danger—it would have been obvious to any one but these three fight maddened heroes—and shouted: "Get back there, men! Get back from that wall!'

"They paid as much attention to me as if they had been stone deaf. I ran over and shoved one after the other back into the street out of danger.

"'When you're told to get back, get back,' I said. 'You obey orders.'

"Then I turned my back and hurried to another point of the fire. The wall fell before I had gone ten yards. I looked around for the three men. They were nowhere in sight! The moment my back was turned they had rushed back to play their stream in that place of peril, and when the wall fell it buried them beneath the bricks—dead."

Lost Time.

The late Sylvanus Miller, civil engineer, who was engaged in a railroad enterprise in Central America, was seeking local support for a road and attempted to give the matter point. He asked a native:

"How long does it take you to carry your goods to market by muleback?"

"Three days," was the reply.

"There's the point," said Miller. "With our road in operation you could take your goods to market and be back home in one day."

"Very good, senor," answered the native. "But what would we do with the other two days?"—Boston Record.

The Last Luxury.

Ten-year-old Arthur had been telling impressively of the number of servants employed in his home. He continued, "And our house is fixed so that if you want a drink or a window raised or to go upstairs or anything all you have to do is to pull a chain."

"But what do you want with so many servants in that sort of a house?" asked one of his hearers.

"Oh," replied Arthur, "we have the servants to pull the chains."—Judge.

Drops and Minims.

Drops vary in size according to the conditions under which they are produced. Some are large and some are small, some long and some short. The drop of the druggist is called a minim, of which 480 go to make a fluid ounce and 76,800 to make a gallon. An actual experiment in filling a one ounce measure will probably show that 400 drops make a fluid ounce. The average drop is 20 per cent larger than the minim.

Too Big a Pill.

The man in bed had never been sick before. The doctor, wishing to ascertain his temperature, pointed the thermometer at him and commanded, "Open your mouth, Jim."

"Wait a minute, doc," objected the patient. "I don't b'lieve I can swaller that."—Judge.

Ill habits gather by unseen degrees, as brooks make rivers, rivers run to seas.—Dryden.

Notice of Sale of Tide Lands.

NOTICE IS HEREBY GIVEN,—That the State Land Board of the State of Oregon will sell to the highest bidder at its office in the Capital Building, at Salem, Oregon, on December 5th, 1911, at 10:00 o'clock a.m., of said day, all the State's interest in the tide and overflow lands hereinafter described, giving however to the owner or owners of any lands, abutting or fronting on such tide and overflow lands, the preference right to purchase said tide and overflow lands at the highest price offered, provided such offer is made in good faith, and also providing that the land will not be sold for nor any offer therefor accepted of less than $7.50 per acre, the Board reserving the right to reject any and all bids.

Said lands are situated in Tillamook County, Oregon, described as follows:

Beginning at a point which is the Meander Corner between Sections 16 and 15 and running along high water line the following courses:

N. 50 degs., 04' W. 490.00 feet.
N. 57 degs., 45' W. 359.60 feet.
N. 69 degs., 04' W. 686.62 feet to the line of Lot 2, then the following course to low water line.
N. 0 deg., 26' W. 230.00 feet, then along low water line the following courses:
S. 61 degs., 44' E. 219.88 feet.
S. 87 degs., 32' E. 294.92 feet.
S. 50 degs., 53' E. 276.86 feet.
S. 68 degs., 40' E. 218.64 feet.
S. 62 degs., 55' E. 188.80 feet.
S. 72 degs., 38' E. 275.96 feet to the Section line between 15 16 then
S. 0 deg., 04' W. 300.00 feet to the beginning, and containing 6.9 acres of tide land in front of Lot 3 of Section 16, T. 1 S., R. 10 W. of W.M.

Bids should be accompanied by a regular application to purchase and exchange for the full amount offered and should be addressed to G. G. Brown, Clerk State Land Board, Salem, Oregon, and marked "Application and bid to purchase tide lands."

G. G. BROWN,
Clerk State Land Board

Dated this 7th day of September, 1911.

Notice of Sale of Tide Lands.

NOTICE IS HEREBY GIVEN,—That the State Land Board of the State of Oregon, will sell to the highest bidder at its office, in the Capital Building, at Salem, Oregon, on December 26, 1911, at 10:00 o'clock a.m., of said day, all the State interest in the tide and overflow lands hereinafter described, giving, however to the owner or owners of any lands abutting or fronting on such tide and overflow lands, the preference right to purchase said tide and overflow lands at the highest price offered, provided such offer is made in good faith, and also providing that the land will not be sold for nor any offer therefor accepted of less than $7.50 per acre, the Board reserving the right to reject any and all bids.

Said lands are situated in Tillamook County, Oregon, and described as follows:

Beginning at a point which is the meander corner between Sections 7 and 8, T. 1 S., R. 10 W. of W.M., and running along high water mark the following courses:

S. 61 degs., 04' W. 187.95.
S. 39 degs., 39' W. 390.80.
N. 61 degs. 45' W. 271.30.
S. 85 degs., 13' W. 719.25.
S. 87 degs., 54' W. 634.40.
N. 88 degs., 56' W. 360.00.
N. 9 degs., 56' W. 329.80.
N. 29 degs., 12' W. 539.11.
North 470.58 to the section line between Sections 6 and 7.
East 637.86 to low water line thence along said line.
S. 24 degs. 15' E. 325.47.
S. 37 degs., 21' E. 738.42.
N. 67 degs., 44' E. 1277.32.
N 62 degs., 12' E. 282.27 to the section line between sections 7 and 8.
South 571.74 to place of beginning, containing 37.3 acres of tide land fronting on Lots 5 and 6, of Section 7, T. 1 S., R. 10 W of W.M. Also

Beginning at a point which is the meander corner between Sections 8 and 9, T. 1 S. R. 10 W. W.M., and running along high line the following courses.

N. 62 degs., 58' W. 115.25.
S. 71 degs., 07' W. 301.90.
S. 55 degs., 07' W. 232.90.
N. 75 degs., 19' W. 543.70.
N. 67 degs., 32' W. 279.00.
N. 14 degs., 25' E. 574.90.
N. 55 degs., 00' W. 654.30.
N. 43 degs., 44' W. 555.60.
N. 35 degs., 37' W. 876.20.
N. 47 degs., 14' W. 223.40.
N. 30 degs., 27' W. 646.60.
N. 49 degs., 09' W. 1197.90.
N. 51 degs., 26' W. 577.00.
S. 73 degs., 55' W. 283.00.
S. 55 degs., 01' W. 797.50.
S. 34 degs., 00' W. 133.00 to M.C. between Sections 7 and 8.
North 571.74 to low water line and then along low water line the following courses:
N. 62 degs., 12' E. 172.29.
N. 70 degs., 10' E. 786.95.
S. 84 degs., 18' E. 453.08.
S. 67 degs., 18' E. 590.00.
S. 46 degs., 44' E. 1400.00.
S. 35 degs., 53' E. 1160.90.
S. 52 degs., 13' E. 734.48.
S. 62 degs., 51' E. 1314.86.
S. 76 degs., 18' E. 1200.09.
S. 49 degs., 28' E. 1115.57 to the line of Lot 1 of Section 9, T. 1 S., R. 10 W., then
West 1929.57 to the place of beginning, containing 134.8 of tide land fronting on Lots 1, 2, 3 and 4 of Section 8, T. 1 S., R. 10 W. of W.M.

Bid should be accompanied by a regular application to purchase and exchange for the full amount offered and should be addressed to G. G. Brown, Clerk State Land Board, Salem, Oregon, and marked "Application and bid to purchase tide lands."

G. G. BROWN,
Clerk State Land Board.

Dated this 10th day of October, 1911.

Notice to Hunters.

This is to give notice that hunting is prohibited on my place and those who do so will be prosecuted to the full extent of the law.

J. H. HATHAWAY.