

# The Bee's Home Magazine Page

## Speed of Cannon Ball Fired from Front and Rear of Fast Moving Train Presents Interesting Problem

By GARRETT P. SERVISS.

"Discussing recently with a friend many topics of a mathematical nature, my friend brought up a question which I would like to have you answer: as we are assured, take for instance, a cannon which will shoot a cannonball with the velocity of sixty miles an hour. Now mount this cannon on the head of a locomotive traveling sixty miles an hour. If the cannon be fired while the train is in full motion will the cannonball leave the mouth of the cannon?—O. A. L., Chicago."



"Yes, the ball would leave the cannon with a speed of sixty miles an hour, with reference to the head of the locomotive, but it would travel 120 miles an hour with reference to the ground. It is already traveling sixty miles an hour while it is yet lying in the cannon, and the impulse given it by the powder simply adds another sixty miles an hour to its motion. If the cannon stood beside the track and was fired at the instant when the head of the locomotive came up with it, then the ball (neglecting the effect of air resistance) would just keep abreast of the locomotive, because each would have the same velocity."

If you reverse the case and suppose your cannon fired from the rear end of the train, then the cannonball and the train would separate at the rate of sixty miles an hour, the forward motion of the ball (with the train) being exactly neutralized."

All of these problems depend upon Newton's "laws of motion," which experience has proved to be correct. The thing to remember is that if a body in motion has more motion in the same direction imparted to it, velocity is added to that which it already possesses, but the original motion in no way or degree subtracts from the effect produced by the added motion."

If this were not so a falling body would not continue to increase its velocity. The force of the earth's attraction, or gravity, is sufficient to cause any body falling near its surface to acquire a velocity of about thirty-two feet during each second that it continues to fall. If you should tumble from the top of the Woolworth tower in Broadway you would descend sixteen feet during the first

second, and at the end of that second you would be plunging downward with a velocity of thirty-two feet per second. During the next second you would acquire an additional velocity of thirty-two feet, making sixty-four in all, and the distance that you would have fallen during those two seconds would be sixty-four feet. During the third second your total velocity would be increased to ninety-six feet, while the distance fallen in three seconds would be 144 feet. Supposing the whole height to be 65 feet, you would be about six and a half seconds in reaching the pavement, and you would strike with a velocity of about 208 feet per second, quite sufficient to destroy all interest in terrestrial mathematics."

"If a cannon were fired from a boat in the ocean, and the cannon were made level by the use of a spirit-level, would the bullet, if it had power to go on without loss of speed, or change of course whatever, finally hit the crest. How is an object made level? R. R. W., Colchester, Ill."

If you mean by "the crest" the horizon, or the line where the sky seems to meet the sea, then the projectile would not touch it, but would pass above it at a height depending upon the distance of the horizon, which, in turn, would depend upon the elevation of your eye above the sea-level. A common rule for finding the distance of the horizon at sea, or on a level prairie, is this: To the height of your eye, in feet, add half that height, and the square root of the sum; the result will be the distance in miles. This rule gives for a height of six feet a horizon distance of three miles. A cannonball fired on a level, from a height of six feet, would pass about twelve feet above the horizon, situated three miles away."

If the cannon could be supposed fired in such a way that the ball would just skim the surface of the water in starting on its straight course, then at a distance of one mile from the starting point it would be about eight inches above the surface; at three miles its height would be six feet, and at twelve miles ninety-six feet. Its course would be "tangent," which is a line touching the circumference of a circle at a right angle to the radius at that point, a radius being a straight line from the center of a circle to any point on its circumference. The plumb-line shows the direction of the earth's radius at any place. What we call a level is a line, or plane, lying in a tangent to the earth's surface, or parallel to such tangent, and consequently at a right angle to radius, or the direction of the plumb-line. The spirit-level is the handiest instrument for determining a level.

## An Old Offender : Copyright, 1915, Internat. News Service. : By Stella Flores



The self-poised young man usually starts his love suit in a most correct fashion, choosing Cupid for his counsel. Although the verdict must come from the girl he loves, whose bright eyes have so bewitched him, he realizes that the jury is most important. In a masterly fashion he wins over her friends, one by one. Yet at the last moment, when victory seems near, wild panic seizes him. In vain does Cupid assure

him he has won, and black gloom settles over him like a mantle. Well, he realizes that for his happiness this is the court of last appeal, and in despair he throws himself on the mercy of the court. If he could only see her eyes, and the little smile hiding in the sweet curves of her lips, how quickly would his suspense and misery disappear!

—STELLA FLORES.

By special arrangement for this paper a photo-drama corresponding to the installments of "Runaway June" may now be seen at the leading moving picture theaters. By arrangement made with the Mutual Film Corporation it is not only possible to read "Runaway June" each day, but also afterward to see moving pictures illustrating our story.

## Fable for the Fair

By ANN LISLE.

There was once a 19-year-old boy who had "high ideals" and lived a "blameless life." Did he take this for granted as a simple and decent proceeding which might be accepted as ordinary as the fact that he was neither a thief nor a murderer? Not at all. He insisted on taking every one he met aside and telling them what a very "rotten place the world was," and how he meant to hold himself far above its altitudes and temptations.

By the time he was 23 years old he was fully convinced that Sir Gallahad would have blushed with shame at his own shortcomings had they met.

At this stage of the game he met a very charming young woman of 25 years. And he fell very much in love with her. He set about his wooing by impressing upon her how spotless he was. He never permitted her to forget for one moment what a treasure she was getting. He insisted on explaining to her that his standards were as high as her own. The girl liked his ideals, but she had all her life taken them for granted, and she no more expected to hear them boasted of than she thought a man would tell how he had never struck his mother or stolen small change from his father's pockets.

So she turned on the man and suggested that if his ideals were as high as hers perhaps they weren't high at all.

And the man, who had no sense of humor, fled from her in horror. Since even the woman he had condescended to love had confessed herself weak and human, he concluded that he was the one sound apple in a whole world full of rotten fruit. He also concluded that his was a lonesome position.

So he promptly went off and drank himself to death.

Moral—The virtue whose chief virtue lies in admiring its own sanctity hasn't any very practical wearing qualities.

## Advice to Lovelorn

By SHARON FAIRFAX

Dear Miss Fairfax: I am 25 and engaged to a girl seven years my junior. Now, I don't love this girl and could not live without her, and I am sure she returns my affection, but when we are out together she always dits with other young men and it is embarrassing. Now how can I stop this? SAM W.

Have a serious talk with this girl. Tell her that you are not jealous and that you do not suspect her of any wrong intention, but that you feel it puts you in a most undignified position when she goes out with you and flirts with other men. Ask her not to belittle you and your love for each other in this way. Tell her you are sure she was only thoughtless and will stop now that you ask it of her.

Dear Miss Fairfax: I am a man of 27. Several weeks ago I took a girl to dinner and to the theater. Now, I care nothing for this girl and merely took her out for an evening's amusement, but since then she has been constantly phoning to me. I asked her not to phone to me again in my place of business, but she still persists. I'll be very thankful to you, Miss Fairfax, if you will advise me what to do. THOMAS D. F.

Tell the girl in a quiet, dignified manner, which she will have to believe, that you cannot be disturbed at business and that you will not come to the phone if she calls you again. Also add that you will call her when you have anything to say to her, and that you hope she will feel that she respects your attitude and determination.

Read it Here—See it at the Movies.

## Runaway June

By George Randolph Chester and Lillian Chester

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### SECOND EPISODE.

In Pursuit of the Runaway Bride.

CHAPTER II—(Continued.)  
"Where's June?" Mrs. Moore had pushed through ahead of the men.  
John Moore walked straight to Bobbie, fidgeting and shook an awe inspiring finger at that young man.  
"Where's my girl?" he demanded.  
Bobbie slowly straightened.  
"Well, she's here," he said. "What of it?"

"Oh—tell you what of it!" said Iris. "June has decided not to see any of you just yet, and she won't!"

This took two letters from the mantel. She gave one to Ned and one to Mrs. Moore. Her husband looked over her shoulder. The letter was addressed to: "Dear Daddy and Mummy—I cannot explain in a letter why I was compelled to leave Ned. Some day I will make you understand and forgive. Please be good to dear Ned and love."  
"YOUR LITTLE JUNIE."

"Here's the man!" shouted Ned, his voice full of sudden fury. He held a pair of gloves in one hand and a card in the other. "These are June's gloves. They were lying on the table, and the card was in them!"

"They're my gloves!" called Iris, but Ned laughed at her. There was no mistaking those dainty, blue embroidered bits of white kid.

"Now, I'll tell you," went on Ned. "This man, Gilbert Blye, whose name I now know for the first time, was with her from the moment she left me until she came here. He is a tall, black Vandyked man, and at Farnville he was seen assisting June on the down train. I saw them myself through the car window talking together. I want to find Gilbert Blye! Are you hiding him too?" And he turned savagely on Iris.

Bobbie lounged forward. "That'll do, Ned," he warned. "Iris, call June."  
"June!" They found Iris throwing doors open and running through the house, calling June. Ned darted up the stairs, but in the hall Iris met him with a frightened face. "She is gone!"  
They all searched for her then, but there was no trace of her.

### CHAPTER III.

Mrs. Gilbert Blye was in shrill voiced converse with a big green parrot, which, from fourth and sharpness of nose and slight of eye arches, might have been a sister to her. A maid announced that some one had wanted to see Mr. Blye.

and, since he was not at home, would Mrs. Blye care to say where he was? He came to New York on an early train.

Mrs. Blye rose instantly. She called straight into the hall and confronted the five earnest visitors. "Did you say Mr. Blye returned on an early train?"

"Yes," Ned tried not to speak curtly. "I saw him."

"I am Mrs. Blye. Is there anything I can do for you?" the lady was studying the group with a screwlike penetration.

Mrs. Blye began to worry herself. Also she began to suspect! That last was her specialty. "If you will tell me the nature of your business with Mr. Blye I may be able to locate him."

"I want my daughter!" blurted John Moore, his lips squaring.

"Oh!" And Mrs. Blye's voice rose. "Your daughter?" She glared at them for a moment. "Will you please wait?" she asked and sailed back through the hall. They could hear her sharp voice tele-



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