

The Bee's Home Magazine Page

Marvels of Force

By GARRETT P. SERVISS.

Kindly frame an illustration by which one may determine the speed and force of a bullet of given weight and density, shot from our earth, should attain in order that it may pass through our atmosphere into infinity.



It is not a recognized fact that centrifugal force, if sufficient, will overcome the power of gravitation, and if so, at what speed would the earth have to revolve to throw off all detachable objects, including our atmosphere?—L. B. Chicago.

Your first question refers to what is known in astronomy as parabolic velocity, or "velocity from for to, infinity." The law governing this velocity is derived by the methods of the calculus, too abstract to be explained in a brief article, but easily understood and applied when put in the shape of a simple formula. Moreover, if you know that formula you can, at pleasure, solve many very interesting problems relating to the world around us.

Briefly stated the formula is as follows: The square of the velocity equals twice the product of the acceleration of gravity by the radius of the attracting body from, or to, which the motion is directed.

This needs a few words of explanation, but does not require any mathematical knowledge beyond simple arithmetic. The acceleration of gravity means the speed acquired during each second by any body left free to fall at the surface of the attracting body. In your problem the attracting body is the earth, and the acceleration of gravity at the earth's surface is about thirty-two feet per second; that is to say, a falling body acquires a velocity of thirty-two feet during the first second, twice thirty-two feet during the second second, three times thirty-two feet during the third second, and so on, thirty-two feet being the amount of velocity constantly added during every second that the fall continues.

The radius of the attracting body, in the case of the earth, is, in round num-

bers, 4,000 miles, which is the distance from the surface to the center of the globe. Since the acceleration of gravity is expressed in feet, we must put the radius into feet also, before we can make the calculation. This is done by multiplying 4,000 by 5,280, the number of feet in a mile. This product is 21,120,000. Now, the formula tells us to double this number, which accordingly becomes 42,240,000, and then to multiply by thirty-two, the acceleration of gravity. Thus we get, finally, 1,351,680,000. Referring again to the formula, we see that this represents the square of the velocity and so we must extract the square root of 1,351,680,000 in order to obtain the simple velocity. Without carrying the calculation out to the last figure, we find that the square root required is 36,750. This is the velocity expressed in feet per second, and dividing by 5,280, we find that it amounts to very nearly seven miles per second.

Seven miles per second, then, is the velocity with which a body falling from an infinite distance would strike the surface of the earth, and, conversely, the same velocity would have to be imparted to a projectile shot straight up from the earth in order that it might go to an infinite distance from the earth. We neglect the effect of the resistance that the atmosphere would offer at the start.

As to the force involved that would depend upon the mass, or weight, of the body. If it weighed one ton the momentum, as seven miles per second, would be 7,000,000 foot-pounds.

The answer to your second question is that centrifugal force is perfectly capable of overcoming gravity if the earth's rate of rotation be sufficiently accelerated. The centrifugal force increases as the square of the velocity of rotation. The formula is: Centrifugal force equals the velocity squared, divided by the radius. In the case of the earth the centrifugal force, at the equator, amounts to with the actual velocity of rotation, to 1/289th of the force of gravity. Then, if the velocity were increased seventeen-fold the centrifugal force would balance gravity, because the square of seventeen is 289. Any increase of velocity beyond that amount would send things flying off the earth from around the equator. At points north or south of the equator the centrifugal force at a given latitude is ascertained by multiplying the equatorial centrifugal force by the square of the cosine of the latitude.

The Latest in Fashions

Republished by Special Arrangement with Harper's Bazar



Lucile has added brilliant bits of color to this suit of natural colored khaki kool tussore in the lining of pussy willow silk showing a white ground with peacock eyes in orange and gray.

Lucile has dropped an overskirt of Van Raalte tulle in bright emerald green over pale pink net embroidered in gold, and has given the crinoline effect to the overdress.

Hidden Faults of Many Wives

American Girl, Frequently Spoiled Before Marriage, Makes Husband Unhappy by Foolish Demands, Petty Jealousy of His Relatives and Other Failings.

By ELLA WHEELER WILCOX.

Copyright, 1915, Star Company.

The failings of men which lead to divorce are usually of a glaring nature; of such a nature that he who runs may read. Drunkenness, or the overuse of intoxicants, which destroys the reasoning powers and the judgment, infidelity and all its ramifications, violent temper, laziness and failure to provide for a family; these are the main chapters in the book of masculine offenses, against happy homes. But the offenses of wives are so frequently subtle and elusive, and so veiled from the public eye, that only those who live in the closest relations may discover them.



They are the little foibles in the vines and parasites in the trees. The American girl is almost invariably a spoiled child before she reaches adolescence. She rules her father and mother and her brothers wait upon her. She is virtually the head of the house, and her wish is law and her whims are like royal edicts. If she marries the spoiled son of a fond mother it is a case of Greek meeting Greek, and disaster must ensue. And if she marries an unselfish and worshipping husband she often forgets that there is such a thing as the turning of a crushed worm, and imposes upon his patience and kindness and unselfishness until he walks forth to meet her only in the divorce court.

Yet the weapons she has used in slaying Cupid have been concealed from all eyes save husband's or other eyes under her roof. And the undisciplined public is more than liable to believe she is the injured party when the divorce occurs.

The passion of many women for hotel life, for excitement and for display amounts to a disease. It is, perhaps, the swinging of the pendulum from the dull and dreary monotony which characterized the lives of their foremothers. The women of this generation are, in many ways, suffering from a sort of hysteria caused by the suppression of the emotional nature of their mothers and grandmothers, just as sons of clergymen do to excess, frequently, everything which their fathers refused to do in reason.

The grandmothers and mothers who lived only to work and make the home comfortable for the men folk produced, by the crucifixion of all natural desires for pleasure and amusement, as descendants, a race of women pleasure-seekers. Put in his taste for home life man changed little. He is the same in every generation. And the woman who wants to make the man she marries happy needs to understand this fact; and whatever else she may ask of him, to give him first the foundation of a comfortable, beautiful well ordered and attractive home, where even the transient guest can feel the atmosphere of well being and content. This can be made only by the mental emanations of its inhabitants.

A woman who sets forth in married life determined to make a real worthwhile wife and mother has chosen the most wonderful and fascinating career-it is possible for her to pursue, and its scope is as wide as the universe. To

create such a home and magnetize it with the love and enjoyment of a good woman's mind is to prepare an anteroom for heaven.

Many a man inclined to stray into forbidden fields and to seek unwholesome associations would linger in this anteroom were it provided for him by love and good sense, in place of his being forced into the unnatural surroundings of hotels.

Petty jealousies of wives, hampering a good hearted man in his impulses towards relatives and near friends, are oftentimes causes of divorces. A man has been known to marry for love (as men usually do), and to set forth with every intention of being a fair and kind and just husband; but before many months she found his relatives, his men comrades and even his books and domestic pets objects of a small-minded woman's nagging jealousy. And cupid was driven out-of-doors, never to return.

Unreasonable extravagance of women is another cause of disaster to the marital association, and this propensity drives many a good-hearted man whose great desire is to please his wife into dishonesty and double dealing in business matters.

Behind prison doors today men are serving long sentences who sinned through weakness and over-devotion to the whims of selfish and unthinking wives. The indolent wife, who settles down lazily into the comfort of a good home, satisfied with the fact that she is married to a man who loves her and unconsciously that she must make an effort to keep her husband in love, is another likely candidate for the divorce court.

In our time and clime ninety-nine men of each hundred like to feel proud of their wives. They enjoy seeing them look well and regret to observe the effect of time upon their beauty. The woman who does not try to keep herself attractive and who allows self-indulgence and indolence to destroy her figure and complexion, is inviting unhappiness to come into her home.

In this busy age, when trains, ships, telegraphs and telephones keep the whole world in touch, men are aware of the existence of women who understand the art of defying time who remain attractive despite the passing of years. Even in remote country places men have ceased to regard old age for the nation as a necessity. They realize there is something lacking in the temperament of a woman who lets herself go merely because she is a wife and mother.

Since men view the subject in this light, the wise woman will not permit her husband to feel ashamed of her. She will think of the art of preservation of her charms as one of her sacred duties, and she will regard the gymnasium and the study of physical culture and the practice of mental callisthenics with respect close to reverence.

In the new life which has come to women in the last generation there lies a danger of becoming too absorbed in personal pursuits to keep in touch with the tastes and ambitions of the husband—even to lose all interest in them.

It is well for husband and wife to have their separate occupations and to follow separate tastes and pleasures to a certain degree. But that degree must never lead to diverging interests, and must never leave the husband feel solitary without the companionship or sympathy of the wife, either in his business or his amusements; nor must the wife be left to find sympathy or admiration elsewhere than at home.

Read it Here—See it at the Movies.

Runaway June

By George Randolph Chester and Lillian Chester

By special arrangement for this paper a photo-drama corresponding to the incidents of "Runaway June" may now be seen at the leading moving picture theaters. By arrangement with the Mutual Film Corporation it is not only possible to read "Runaway June" each day, but also afterwards to see moving pictures illustrating our story. (Copyright, 1915, by Serial Publication Corporation.)

TENTH EPISODE. A Prisoner on the Yacht.

CHAPTER II—(Continued.) "That's something else I made for you in the pantry, dearie," explained the stewardess, in her coaxing whine, and bobbed her neck. "It's a fine stimulant and soothing to the nerves."

June took the fragile glass in her hand. Its sheer beauty had won her. She inhaled daintily. The fragrance was most appealing. She looked at it again and smiled. She did feel faint and weak. She lifted the glass to her lips, and the tip of her tongue caught the delicious flavor. Suddenly, as she tilted the glass to drink, she caught the pallid eyes of the stewardess fixed eagerly upon her. The woman's mouth was half open, and she was breathing hard.

With a flash of intuition June jerked her lips from the glass and threw it, crashing and splintering, into the fireplace. "Why, dearie," exclaimed the stewardess, and in great agitation she pushed a button at the side of the mantel.

June's eyelashes lowered for an instant and her lips set; then quietly she went into the little blue boudoir and sat thoughtfully upon the daintily upholstered settee.

"The steward came pompously in. "Well, you've done it again, you," he growled as he surveyed the splintered fragments of the delicate Venetian glass.

"No, Percy," whined the woman and glared toward the boudoir door with her pallid eyes. She jerked her thumb in that direction, and then she winked.

"That's you," snarled Wilkins. "You always say it's a guest."

"How much?" whispered the woman in a sibilant hiss, which carried as it was intended to do.

"Their glasses is \$12 apiece, and it'll be taken from your wages. That comes out of my pocket!"

June bit her lips. Twelve dollars! It was a lot of money to a girl who had found dollars coming slowly and independence hard to win, but she picked up her purse. After all, she had no proof that the woman meant anything but kindness.

"Is this breakage charged against you?" asked June.

"Why, yes, dearie." A sniffle went up with the whine.

"How much will it cost you?" "Twelve dollars," sniffle. "But it's all a part of our job, so never mind, dearie."

"I do not wish you to lose the money," and quite thoughtfully June counted \$12 from her slender store. She added another for the customary tip and gave one to the man, and they thanked her most obsequiously. As June returned to the boudoir the suppressed voices broke out again.

glass from the constant friction of a pocket. June picked it up and opened it with idle curiosity. On the first inside page, at the top, was the big scrawled word "From." At the top of the opposite page was the word "To." The first item on the "From" page was dated four years back.

"From Sallie Fish, wedding portion—2,000 pounds." "Beneath this was the item: "Savings, Percy Wilkins—\$62 pounds."

"On the opposite page the first entry was: "Booking to the stars." "Percy and Sally Wilkins, 22 pounds."

After this the entries were all in dollars. On the "From" side the were chiefly the wages of Percy Wilkins and Sally Fish Wilkins, for they had apparently gone into private service immediately.

(To Be Continued Tomorrow.)



Victrola IV, \$15 Oak

The supremacy of the Victrola is linked with the world's greatest artists.

The following Omaha and Council Bluffs dealers carry complete lines of Victor Victrolas, and all the late Victor Records as fast as issued. You are cordially invited to inspect the stocks at any of these establishments.

Schmoller & Mueller PIANO COMPANY

1311-1313 Farnam St. Omaha, Neb. Free Victrola Recital Friday from 3 to 4 P. M.

Nebraska Cycle Co.

Branch at 334 BROADWAY Council Bluffs. Corner 15th and Harney, Omaha. Geo. E. Mickel, Mgr.



The most famous singers and musicians make records for the Victor exclusively.

There are Victors and Victrolas in great variety of styles from \$10 to \$250.

Victor Talking Machine Co., Camden, N. J.

Victrolas Sold by A. HOSPE CO., 1513-15 Douglas Street, Omaha, and 407 West Broadway, Council Bluffs, Ia.

Brandeis Stores Talking Machine Department in the Pompeian Room



Victrola XI, \$100 Mahogany or oak