

# The Bee's Home Magazine Page

## What Becomes of the Energy Stored Up in a Coiled Spring?

By GARRETT P. SERVISS.

The law of conservation of energy states that in any system of bodies energy may be differently distributed and reappear in different kinds of work, but in all its changes there is neither loss nor gain in quantity. Then what becomes of energy in this experiment? Wind up a watch; the spring then holds potential energy. Heat the spring until the temper is taken out; then release it. It does not spring back as it would have done if released before heating. Where did the potential energy go which had been stored up in the spring by winding? Or eat up the coiled spring with nitric acid. What has become of its potential energy now? In using heat it will be noted that the same amount of heat is given off from the wound as from the unwound spring.—Reader, Papillon, Neb.



Many a man of much scientific knowledge and acumen has puzzled his mind over you question. Recent discoveries have so shaken formerly accepted doctrines that even the validity of the great law of the conservation of energy has come to be doubted. However, putting aside theoretical considerations, this law appears to be so universally obeyed in all the operations of nature that we can experiment with (outside the phenomena of life or vital action) that the presumption is in its favor, and when we find something which seems to contradict it, we ought to be careful to exhaust every plausible explanation before concluding that the supposed law is no law.

Now what does this "law" assert? It asserts that the total energy contained in the universe is a constant quantity, and that, whatever particular forms it may assume, its sum remains absolutely the same. And what is energy? It is that quality or condition by or through which matter acts upon other matter so as to produce changes of state or position. In its many manifestations and transformations, it appears in such forms as chemical energy, electrical energy, mechanical energy, all of which, under suitable conditions, are interchangeable, one for another.

Every kind of energy has two phases which we recognize—first, "kinetic energy," or energy in the act of producing motion or doing work, and second, "potential energy," or energy which is capable of doing work, but is not actually doing anything, being stored up in some portion of matter and resting idle, like unexpended money in a lucky man's pocket.

To get potential energy, kinetic energy must be expended. Kinetic energy stajds for work, the product of work. But each produces the other, or makes the other's existence possible. I take two cases of potential energy for illustration. First, that of a stone which is lifted a certain distance above the ground, and suspended there by a cord. In lifting the stone kinetic energy was expended against the force of gravity, and this has now changed into potential energy, or "energy of position." Being separated from the earth, which attracts it, there is a pull upon the stone tending to bring it back to the ground. This pull is balanced by the tension of the cord. If you cut the cord instantly the potential energy begins to change back again into kinetic energy, and the stone drops, developing the course of its fall as much kinetic energy as was originally expended in lifting it.

But suppose that instead of cutting the cord and releasing the stone you, by some means, suddenly destroy the stone. What becomes of the store of potential energy? Clearly, since you cannot destroy the substance of the stone, but can only destroy it as a stone, transforming it into dust, or smoke, or gas, the apparently lost energy has simply been divided up among the billions of microscopic particles that now represent the stone. The total of the kinetic energy developed by their descent to the earth, no matter how long it may take, will be equal to the amount of potential energy that the stone contained.

But let us take another instance where the disappearance of energy seems more mysterious. This is your own case of a coiled spring. The kinetic energy expended in winding up the watch is stored as potential energy in the spring. Now untemper or destroy the spring; what becomes of the energy in this case? Can the ghost of coiled spring exert pressure? If it is a scientific ghost it may, and in this way. Consider that the opposite surfaces of the flat coiled spring are in opposite states of strain, the concave surface elongated. It is conceivable that when the spring is immersed in the acid the twofold strain to which its molecules are subjected may give rise to electric currents, which pass away into the ether, and the sum of whose kinetic energy is equal to the potential energy that the spring held. This, to be sure, is a hypothetical explanation, but it is based upon known physical principles. If you simply untemper the spring by the application of heat, all that you now destroy is that state of the molecules which resulted from the strain, but here again it is conceivable that the destroyed "strain" may have been taken up by the ether in some form of electric energy.

In a word, it must not be assumed that the only way the potential energy in the coiled spring can be used is in driving the wheels of the watch. If the spring, or the state of strain in the spring, is destroyed the energy may reappear in the form of heat, or electricity, or some other kind of working force not yet recognized by our science. In its new form it may pass away into the ether without being detected. Careful experiments in this field would possess absorbing interest.

## "The Lover's Litany"

(Illustrating a Poem of Rudyard Kipling's and the Changefulness of a Chap's Heart)

By Nell Brinkley

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No. 1. "Eyes of gray—a sodden quay,  
Driving rain and falling tears,  
As the steamer wears to sea  
In a parting storm of cheers.  
Sing, for Faith and Hope are high—  
None so true as you and I—  
Sing the Lovers' Litany:  
'Love like ours can never die!'

No. 2. "Eyes of black—a throbbing keel,  
Milky foam to left and right;  
Whispered converse near the wheel  
In the brilliant tropic night  
Stars that sweep and wheel and fly,  
Hear the Lovers' Litany:  
Cross that rules the southern sky!  
'Love like ours can never die!'

No. 3. "Eyes of brown—a dusty plain  
Split and parched with heat of June,  
Flying hoof and tightened rein,  
Hearts that heat the old, old tune.  
Side by side the horses fly,  
Frame we now the old reply  
Of the Lovers' Litany:  
'Love like ours can never die!'

No. 4. "Eyes of blue—the Simla Hills  
Silvered with the moonlight hoar;  
Pleading of the waltz that thrills,  
Dies and echoes round Benmore.  
'Mabel,' 'Officers,' 'Good-bye,'  
Glamour, wine and witchery—  
On my soul's sincerity,  
'Love like ours can never die!'

No. 5. "Maidens, of your charity,  
Pity my most luckless state.  
Four times Cupid's debtor I—  
Bankrupt in quadruplicate.  
Yet despite this evil case,  
And a maiden showed me grace,  
Four-and-forty times would I  
Sing the Lovers' Litany:  
'Love like ours can never die!'

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 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.

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### SECOND EPISODE.

#### In Pursuit of the Runaway Bride.

#### CHAPTER II—(Continued)

"There he goes!" cried Ned. "The scoundrel!"  
Iris, moving rapidly away, saw the confusion and blamed his wife for the scene, for now she was in the lead of the excited group, which was rushing toward him.  
The house of the Moores at Brynport was dark when June arrived, the dear old house. It stood back amid the dim trees, with a dignity and beauty which she had never before thoroughly appreciated, and at the gate she hesitated as if, with no one to welcome her, she had no right here.  
There was a welcome, though, and a joyous one, a loud, hearty one, a series of delighted barks from her dog Bouncer. He had known her very presence from her lack in the shed. It was the work of but a minute for June to clamber through an unlocked kitchen window and

to rush upstairs, get her maid, Marie, seize several garments and drag with her the astonished servant.  
"Miss June! Miss June!" cried Aunt Debby, out of breath from running, but June only waved a hand at her as she taxi swept out of the drive.  
A limousine had stopped in front of the house, and a black Vandyked man had alighted, but in the window of the car he saw June's face, turned wistfully toward the house and he ran forward.  
"Miss Moore!" he called, but June's taxi rattled on. He jumped in his own car and gave the word and started in swift pursuit.  
The two machines were still in sight when the runaway of Bobbie and Iris dashed around the circle.  
"Is June here?" called Iris.  
"Lawsdy, no!" puffed Aunt Debby. "Dat's her son yonder!"  
The runaway was gone with a whiz, and immediately after came the family limousine.  
"Is June here?" called all three of the occupants at once.  
"She's just gone gone! The gentleman with black whiskers has just done gone! Mr. Bobbie and Miss Iris has just done gone! Whooh!"  
Around the corner there rolled an electric coupe. It was brilliantly lighted, and in it sat an angular woman with a high, long nose and high arched brows, beneath which glittered two sharp eyes.  
"Say!" shrieked the occupant of the electric coupe.  
Aunt Debby, her broad hand on her stomach, pointed down the road.  
"To be continued Monday."

## In the Squirrel Cage

By BEATRICE FAIRFAX.

All of us have seen and pined the caged squirrel which wildly runs about its little prison and succeeds only in whirling its little wires in circle after circle leading nowhere. And many of us, who are not compelled by circumstance to travel ineffectually in just such a circle, still hustle and bustle madly through days that lead us nowhere.  
The great Marcus Aurelius has said, "Nothing is more wretched than a man who traverses everything in a round, and prides into the things beneath the earth, and seeks by conjecture what lies in the minds of his neighbors, without perceiving that it is sufficient to attend to the daemon within him, and to reverence it sincerely."  
To put the ancient idea in more modern terms, there is nothing sadder in all the world than the man who goes through life prying into the affairs of others, looking askance at all natural phenomena and criticizing life and the world without realizing that his chief business in life is to contribute something to it instead of criticizing all that is contributed to it and to cultivate his own personality. People and things merit veneration for their excellence just as much as they deserve criticism for their weakness. To most people we are akin in deed, action and thought. And where we differ it is hardly possible for us to judge clearly what is black and what is white.  
Prying and peering direct us in a little circle of critical investigation. They lead to no accomplishments; they do not make it possible for us to put our energies into real accomplishments, for they make our point of view smaller and our capacity for deeds in keeping therewith.  
Missing one's own business means

more than ignoring the things that do not concern us. It means attending to the things that do concern us. The energy we waste in wondering about things which we are neither going to correct nor to assist, the thought we put into sneering at the course of action of some one else, simply jerk us into a little circle round and round which we travel with a vast expenditure of energy and a tiny amount of accomplishment.  
The world lies ahead. The thing to do each day is the definite task that demands your own personal attention. Each such task leads on to another. In traveling this path of accomplishments one does not circle about one's self; one does not wildly fly about a cage; one is not imprisoned in the daily round, but one is led straight on to a goal of achievement, whether it be seen or unseen.  
To devote one's life to petty gossip, to carping criticism, to scandal and backbiting and sneering and slander, to investigation of the things that do not concern one—to all the peering and prying of which these things are but a small part—is to prison one's self voluntarily in a squirrel cage.  
And we who have watched homes in treadmill, who have seen poor plodding donkeys endlessly turning the windlass of a pump, who have even given our sympathies to squirrels in cages, had best make sure that we have not given ourselves over to similar fates.  
The endless round of peering and prying, of petty criticism of life, leads nowhere. It dooms one rather to whirling about a circle. The way out of this squirrel cage is there for the taking. Stop peering and prying, stop squinting up your eyes in order to see a tiny cross-section of life. Stop discussing the wickedness of the world and the immorality of your neighbors. Don't go endlessly over and over a little circle of petty gossip. Don't make your life policy "I object."

### Advice to Lovelorn

By BEATRICE FAIRFAX.

Tell, Dear Mr. Dave,  
Dear Miss Fairfax: I am 21 and have been keeping company with a girl two years my senior. I have a fine education and a position paying a good salary, with the best of chances for advancement. We are engaged to be married in two years—so soon as she has finished her education.  
A few months ago I was taken ill, but the physicians did not know what was the matter with me. After consulting a specialist I find I am in the first stages of tuberculosis. I am sure it would break her heart to know this, but I cannot marry her now. Would you advise me to tell her at once in order not to waste her time?  
W. A. M.  
I hope you will take radical steps to cure yourself of this dread disease, which is to be checked when in its early stages. If all means tell the girl you love at once. My dear boy, I feel sure you can be cured as many others have been who were like you fortunate in finding out their malady before it had advanced too far.

## Infection!

Little hurts often cause serious ailments—sometimes Blood Poison. Germ infection is a danger always present. Safety First! Kill the germs—prevent infection by using SLOAN'S LINIMENT. The Great Antiseptic. Good for cuts, sores, sore throat, bruises, swellings, scratches and bites of animals. Buy a bottle to-day. At all dealers. Price 25c, 50c, & \$1.00. Dr. Earl S. Sloan, Inc., Phila. & St. Louis.

## Protect Yourself!

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