



The Bee's Home Magazine Page



All Members of This Club

Copyright, 1913, International News Service

Drawn for The Bee by George McManus



Might and Mystery of Radium

Source of Power Which Enables It to Hurt Projectiles a Hundred Thousand Miles Per Second Fully Explained

By GARRETT P. SERVISS.

I have often wanted to ask you to tell me something about radium in a special article. I mean tell us in such manner as a lay mind can understand. No encyclopedia does. What, for example, is the meaning of its power; whence derived? What is radio-activity? What are these emanations so much dwelt on, and how do they act? Please tell me, are these emanations a disintegrating of the countless particles composing a particle of radium? If so, is it because the compression in the particle is so great, so imponderable, that the molecules begin to escape—emanating, as I imagine—can continue to escape or to emanate for years and years and years with no sensible diminution of the particle? Won't you kindly resolve the whole theory and make it plain as possible? How is it powerful for anything in particular? Would a particle of gold or some other metal give off emanations, if emanations be what I imagine, namely, disintegration? J. M. W.

The answer to these questions must be almost as compressed as the inquirer supposes a particle of radium to be.

Radio-activity is a recently discovered property of the atoms of matter which causes them to send off continuously and of their own accord, streams of radiation, some of which consist of almost infinitely small particles (very much smaller than the average atoms themselves), while others are apparently only vibrations in the ether, in which respect they resemble waves of light and of electricity. One result of radio-activity is that the atoms of matter affected by it gradually disintegrate or disappear.

Only a few substances are known to be radio-active, but it has been conjectured that all substances may possess this property in a degree at present imperceptible to us, and thus the universe may be slowly dissolving.

The known radio-active bodies are the substances called "uranium" and "thorium," together with certain elements derived from them, the most famous of which is "radium." All of these substances are remarkable for their great atomic weight; in fact, they are the densest, or heaviest, in existence—heavier than lead, gold or platinum.

Three kinds of rays are given off by these substances. Those called "Alpha" rays consist of particles of about the

mass of an ordinary atom of hydrogen (the lightest known atom), and moving with a velocity of about 20,000 miles per second. Those called "Beta" rays also consist of particles, but much smaller than the others, and moving with velocities of more than 100,000 miles per second. The third kind are called "Gamma" rays, and these appear to be, not streams of particles, but vibrations, resembling the X-rays, and propagated through the ether in the same manner as light.

All of these penetrate solid matter in varying degrees. The Alpha rays have the least penetration, being stopped by a single sheet of paper. The Beta rays have about a hundred times more power of penetration, while the Gamma rays are so piercing that they have been sent through a foot of solid iron.

In consequence of the disintegrating effect of radio-activity, a bit of radium, left to itself, gradually disappears, but, so minute are the particles shot off, and so great is the proportion of them that simply hang together in the atom without immediately escaping, that it has been estimated that about 2,500 years are required for the complete breaking up of an atom of radium. Yet the energy set free by this slow process is so great that a single gram of radium compound emits, in one hour, sufficient heat to raise its own weight of water from the freezing to the boiling point. If we could get unlimited supplies of radium, instead of having to be content with the one or two grams that exist in all the laboratories put together, we might look with perfect indifference upon the rapid exhaustion of the coal fields.

Now, whence comes this mysterious energy? It has been found that the heat is probably derived from the internal bombardment of the radium atom itself by the Alpha particles? The only answer possible, at present, is that there is a gigantic store of energy locked up, in some unknown way, in the atoms, and is held in suspense there until the automatic disintegration of the atoms sets it free to act in other ways. It then sends the particles flying, and their collisions produce heat. As far as potential energy is concerned, the mightiest explosive ever invented by man is pitifully weak compared with the explosive force contained in everything about us.

The problem of the origin of the inter-atomic energy involves the whole question of the nature of matter.

Suppose we look at it in this way: Matter is energy in a particular form, but energy implies motion, or the ability to produce motion. To create an atom of matter energy must be locked up. Apparently it disappears in the atom. As long as the atom exists, as such, the imprisoned energy is imperceptible to us. Some think that an atom resembles a minute solar system, in which infinitesimal particles are in swift revolution around the center of the atom as the planets are in revolution around the sun. Something, in the case of radio active substances, interferes with the regular motions of the particles, or electrons, or is transformed into a new atom of a different kind, and a great amount of energy is released. More slowly, the same process may affect all the matter in the universe, and, in the course of time, every word now in existence may dissolve, but the energy locked up in these worlds reappears in the formation of new ones.

The "emanation" given off by radium appears to be something different from any of the three kinds of rays that have been mentioned. Some regard it as being a kind of gas. It has the power of imparting the property of radio-activity to any other substance that happens to be near a bit of radium, as for instance, the hands and clothes of the experimenters. But this imparted radio-activity does not last long. One of the most wonderful things about the emanation is that it has been found to change, of its own accord, into helium, an element entirely different from radium, as if nature were giving us a hint that the dream of the ancient alchemists, that base metal might change into gold, was not without foundation.

The tendency of all things to give off emanations, of one kind or another, is not a new discovery. There is probably nothing that does not thus affect its surroundings, in ways unguessed. Living beings radiate emanations upon every-

Modes of the Moment -:- Described by Olivette



By OLIVETTE.

The left-hand illustration shows a gracefully draped evening gown in blue brocade. The bodice and sleeves are made of pink voile de sole outlined in single pearls. The corsage is formed of rich embroidery finished

off with a jeweled centre. The embroidered linen. A simple morning frock is cut with a rather ample train. The central figure illustrates a useful walking gown in blue serge with a slightly draped skirt; the small rolled collar and the entwined bands of trimming are made of coq de roche silk; the white collar is of

thing around them. The dog follows his master through all the intricacies of a crowd, and because of his perception of some emanation not perceivable by human senses.

Dr. Le Bon has suggested that the power of some animals to see in the dark is due to the existence of emanations. Thus the cat sees in the darkest night by virtue of some halo produced around our bodies by vital action, and photographs made in the dark are similarly explained. What was once known as "odoric force," producing an alleged luminous nimbus around a human being, would, by this hypothesis, be accounted for as the result of an emanation. When this subject was under investigation many years ago it was remarked that relatively few persons exhibit the phenomenon in visible form. They are like gold, which shows no perceptible radio-activity, although the property may exist in it, while those who exhibit the nimbus resemble radium, which pours out an abundance both of rays and of radio-active emanation.

Driven from Home

By BEATRICE FAIRFAX.

"My father and mother have not spoken a kind word to each other in fourteen years on account of some trouble he lives by seeing another woman. He lives in the front of the house and she lives in the rear, and they hold no communication except when they want to argue or quarrel. I have several brothers and sisters, and they are always quarreling with each other. Naturally they would be with such an example. I never go home in the day, and only at nights when the house is dark and every one in it is asleep. It is the only way I can insure peace for myself. There is no such thing as love in our home, and I can't remember when there ever was."

man of 21 who says he is in love with a girl of 22; they have kept company for eight months and are to be married in the early fall. He will not be in position to support her for a few years, and she will be compelled to retain her position downtown. This she is willing to do, but he wants to know if under the circumstances he will be justified in marrying her.

Ordinarily, I should say no. But this girl understands what a hell his home has been and loves him enough to long to use her hands and brain to make him a new one. He can never develop in the home of his parents. If there is any manhood in him it cannot grow under such conditions, and the sooner he is transplanted the better for him and for this extract is from a letter of a young girl who loves him.

Your Daughter's Friends

Ella Wheeler Wilcox Writes to Mothers on a Very Important Topic

By ELLA WHEELER WILCOX

Copyright, 1913, by Star Company. Do you know all about your daughter's friends? About their social pleasures?

Your daughter may be attending school; she may be employed in an office, or in a factory, and she may tell you some morning that she will stay all night with one of her girl friends.

Do you investigate the matter and know just who this girl friend may be? Do you take sufficient interest to find out what the entertainment was which these girls attended, and just where they went after the moving picture or the vaudeville show was over? You say you trust your daughter. But can you also trust every friend the daughter makes?

The very innocence of your child may lead her to place her confidence in those who are seeking her downfall.

She believes "Mollie" is as good as herself. And she goes to stay all night with Mollie.

But Mollie has lost her standards of right living; she has become obsessed with the demons of extravagance and excitement, and she has decided that it is an old fogy idea to work day in and out, and earn only a small wage and spend her evenings in a dull flat or cheap boarding house.

Mollie has already sold herself to the people who give her more than she can earn by hard work. And she tells your daughter what liberal people they are, and what a good time they can have.

He owes no duty or gratitude or love to his parents. He is fearful himself every day he remains in such a home, and is of no benefit to them. I would urge him to leave, though marriage were not the alternative. How much more emphatically I urge it when it means a home where love is!

He may have to work hard; there will be many hardships and privations for both, but so long as they love each other, little else counts. With love and peace he will have a chance to grow morally and spiritually and mentally. The best in him will be developed, and he will be more of a man at 25 years in such an environment than he would be at 40 years if he remained at home.

When a father and mother discover they no longer love each other, a discovery that is made tragically often, their first thought should be of how this discovery will affect the lives of their children.

If they are brave enough, strong enough, and broad enough to go on living together in outward peace, making the happiness of their children a greater consideration than their own, the children will grow up loving and respecting them, never suspecting that the two they love more than all others in the world do not love each other.

It is a fearful price to pay, but the rewards are commensurate. If on the other hand, the parents find such conditions intolerable, the next alternative, better an open rupture than to live under the same roof and wrangle and quarrel. Better a breaking up of the home than the farcial semblance of one.

A divorce is decent, dignified and respectable compared with living like Kilkenny cats. Children may love their parents though they are not living together as man and wife. They may respect them and undoubtedly do, but there can be no respect for them when they bicker and wrangle and dispute and quarrel, losing in their uncontrolled hatred for each other every mark of decency.

This young man cannot respect his mother or father. Unless he leaves home he will learn to have no respect for any one else and will lose all he has for himself.

He has a chance to make an ideal home of his own. May he take it speedily, and there remain with him only sufficient impress of the hell he is leaving to save him from introducing any element of it in the heaven that lies before him.

Why Women Are Not RICH.

Man is a millionaire many times over in the possession of blood cells. Women is not so rich, for scientists have proven that the normal man has five million—the woman only four and a half million to a cubic millimeter of blood.

A decrease in number of red blood corpuscles and a person "looks pale"—in fact, is anemic, the blood does not get the right food and probably the stomach is disordered.

Dr. E. V. Pierce found years ago that a glyceric extract of golden seal and Oregon grape roots, queen's root and black cherry bark, would help the assimilation of the food in the stomach, correct liver ills and in Nature's own way increase the red blood corpuscles. This medicine he called Dr. Pierce's Golden Medical Discovery. By assimilating the food eaten the system is nourished and the blood takes on a rich red color. Nervousness is only the cry of the starved organs for food, and when the nerves are fed on rich red blood the person loses those irritable feelings, sleeps well at night and is refreshed in the morning.

"I was attacked with a severe nervous disease, which was caused by a disordered stomach and liver," writes Mrs. J. D. LITTLE, of Washburn, Tenn., June 22. "All my friends thought I would die and the best physicians gave me up. I was advised to try Dr. Pierce's Golden Medical Discovery, and derived much benefit from same. My case had run so long, it had become so chronic that nothing would effect a permanent cure, but Dr. Pierce's medicine has done much for me and I highly recommend it. I heartily advise its use as a spring tonic, and further advice alling people to take Dr. Pierce's medicine before their diseases have run so long that there is no chance to be cured."

Dr. Pierce's Medical Adviser, 31 cents, to pay for wrapping and mailing only.