

### The Secret of the Atom

Radium, Like a Prestidigitator, Gives Us Glimpses That Only Set Us a-Wondering, but When We Catch the Trick the World Will Be Revolutionized.

BY GARRETT P. SERVISS

A reader asks for the meaning of the statement that "a comparatively small amount of radium could run a ship." The meaning is that the atoms of radium are filled with internal energy, which, if released under mechanical control, would do a vastly greater amount of work than we can obtain from any other known source.

It is probable that all atoms are similarly charged with energy, but only those of the radio-active substances spontaneously reveal the existence of this energy by giving off heat, or by hurling forth fragments, or constituent parts, of their atoms. Radium, by virtue of its internal energy, keeps itself continually at a temperature several degrees above that of the air around it. But the heat is given forth so slowly that it cannot be employed for mechanical purposes, to say nothing of the fact that the amount of radium at our command is excessively small.

A piece of radium might be likened to a gradually oxidizing lump of coal; if its rate of atomic disintegration could be hastened the effect would be like putting the coal into a furnace and burning it rapidly.

whereby its energy would become available for mechanical use. If we could not burn coal, but could, nevertheless, perceive its wasting away that it had within it a store of energy which only required to be delivered faster in order to become available for our use, then the mechanical utilization of the energy of coal would be as alluring, and apparently as hopeless a problem for us as that of the utilization of the energy of radium is at present.

The impingency of the energy thus shown to us in a form in which we cannot grasp it makes its nonpossession an irritant, and ought to make it a powerful tonic to human genius. It is as if a mountain of adamant showed by slight outcroppings veins that it was stuffed full of inestimable treasure, which defied all attempts to gather it because of the impenetrable nature of the enclosing rock.

Some time genius will break into the adamant prison of the atomic energies and release them as fast as we want them, and then—there will be "a new earth" for man to develop his powers in, and the old earth, the baby's cradle of humanity, will have passed away.

Then a few pounds of radium will, indeed, drive a ship, not of the watery sea, but of the fathomless blue ocean of the atmosphere, around the world, and possibly farther than that! Then will come upon man anew the swell of pride, thinking himself in truth a god, but not remembering that the gods are immortal, while radium, with all its hidden energy, is as mortal as man himself.

In giving forth its essence of power, radium perishes—though slowly. The "lifetime" of radium is calculated at several thousand years. It would be for man's interest to shorten it from years to hours or minutes. Thereupon its gigantic energy would come forth and tower up like the irresistible genie from the Arabian fisherman's bottle, and become his slave.

It has been calculated that one pound of radium would, in the course of its life, develop about 18,240,000,000,000 calories, or heat units. Now one pound of anthracite coal, completely burned, can develop 3,500,000 calories, which is only about one five-millionth of the amount stored in an equal amount of radium.

Then, make the pound of radium develop, or give out its energy, as fast as the burning coal does and look what you would have! But only a small fraction of a pound of pure radium has as yet been extracted from its ores, in all the laboratories put together, and when it is mingled with substances that are not so radioactive as itself radium's power is proportionally diluted.

Yet there is, all told, a good deal of radium in the earth, enough, perhaps, to help keep it warm, or rather to prolong its existence as an unfrozen and life-bearing globe. So, too, it has been thought that radium in this sea may be a source of supply for its apparently unlimited energies.

But there is reason for thinking that radium is not peculiar in possessing vast stores of energy locked up in its atoms. On the contrary, it is probable that all the atoms of which the universe of matter is made up are similarly constituted,

so that even the invisible air is packed with energy that if released could be used to produce mechanical effects. It has only been actually proved, however, that the atoms of substances of great atomic weight are thus endowed. One may get a conception of them as centers of potential energy by likening them to wound up springs which perform no work until the catch is released. Where did their energy come from? How were they wound up, and who, or what did it?

Only speculative answers have been given to these questions. We do not know how the mechanism of the solar system, with its revolving and rotating planets, originated, although it lies all open before us, even less do we know how the system of the atom with its infinitesimal and unseeable particles, which move with speeds comparable with that of light, was formed. And, as we cannot yet use the earth for a flywheel, so neither can we employ the spinning atom to produce mechanical power.

**FALSE FIRE ALARM**  
A telephone alarm from 2018 North Third street, last night proved to be false, and several uptown fire companies were alerted.

**TO EXAMINE CLERKS**  
The United States Civil Service Commission announces an examination for first grade clerk; field service, to be held on September 7. In this city, application papers can be secured from the secretary, Board of Civil Service Examiners, Harrisburg Post Office.

**MOVING OFFICES NOW UNDER WAY**  
Employment Bureau Now Is Wholly Run From Philadelphia; Others May Go

The war work of the State of Pennsylvania seems to have given an opportunity to Philadelphia to transfer more state offices to other cities.

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### EVERY ALLIED PLANE SOON TO CARRY BOMBS

British Trainers Liberal in Praise of American Student Aviators

By Associated Press  
With the American Army in England—Almost every airplane used by the Allies soon will carry bombs.

Experts in aerial warfare are convinced that the general efficiency of the corps will be increased if a bombing device is added to every plane sent out, even though it be of the type once intended only for reconnaissance work, and Americans now training in England are being as carefully drilled in bombing as in handling a machine gun.

Lessons learned during the resistance offered in the recent offensive have served to increase the already high regard of both British and American officers in the air service for the flying, bomb-carrying craft, and over the camps and countryside where aviators are being trained, planes are in evidence almost every hour, dipping down from high in the air and skimming the nearby country, barely missing tree tops and houses. It is the new lesson they are learning, and observers back from the front where the allied planes did such remarkable work not only in scouting and distracting the enemy but actually in breaking up formations and at points checking the onward movement have urged concentration on that form of training.

British trainers, devoted to American aviation camps, have been liberal in their praise of the new fliers from overseas, their only criticism being that the Americans are "a bit too keen." Their tendency has been to go in for flying stunts rather too early in training but even this the trainers have admitted is a valuable fault, although one not to be encouraged.

**Team Work Necessary**  
It has been pointed out to the Americans that team work as well as individual efficiency is a prime requisite and the Americans have steadied themselves to the routine their trainers have found makes for general advancement if not for individual applause. Fancy flying, the aerobic work that once found favor and drew heavy rate receipts at aerial exhibitions in the United States, still is taught but the learning of that form of flying also has come to be regarded merely as routine and wholly incident to the steady, low flying desirable for attacking camps and troops in formation.

Accidents have occurred in the camps where the Americans are being trained and a few men have been killed, but the records show that the percentage is far less in England than in the United States. Those in training here are inclined to attribute the difference more to luck than to anything else, although there also is pointed out the probability that the average airplane used in England is a better made machine than the average that has been used in the United States.

The bombing devices being attached to virtually every plane is not the contrivance that was used in the earlier days of the war. That used then was little more than a mechanism that released the projectile, allowing it to fall at a point approximately near the target. The device now being used is one with which the operator may with much practice become almost as proficient in marksmanship as an artilleryman.

### STERN'S CUT SHOES RATE

209 WALNUT ST.

Stern's Semi-Annual Gigantic Sale of High Grade Shoes

Starts Tomorrow, Saturday, August 3rd, and Continues For One Week Only

Take a glance at these prices and you will readily realize how much to your advantage it is to get here early tomorrow morning if you are interested in a good pair of SHOES AT A BIG CUT IN PRICE.

**Sale Positively Lasts One Week Only**

**Women's Sport Shoes**  
OF FINE WHITE SEALS  
Leather soles of good quality rubber soles. Most all sizes to start. Values up to \$3.50.  
Sale Price  
**\$1.98**

**Men's White CANVAS OXFORDS**  
SALE PRICE,  
**\$1.98**

**Women's Fine Patent Kid Oxfords**  
As Pictured.  
High covered heels and hand-turned soles. \$6 values. Sale price,  
**\$4.50**

Same style in kid, with leather lous heels. \$5.00 values. Sale Price,  
**\$3.95**

**Women's Dull Kid Two or Three-strap SANDALS**  
Some Goodyear Welts. \$3 Values.  
**\$1.98**

**Men's Cordo Brown ENGLISH BALS**  
Excellent Like cut. \$6.00 value.  
**\$4.50**  
Same style in black. Sale price,  
**\$3.95**

**Growing Girls' Dull or Patent Colt Mary Jane Pumps.** Sale price,  
**\$1.98**

**400 Pairs Women's Fine Patent Colt or Soft Dull Kid Pumps, Oxfords, and Strap Sandals**  
Values up to \$4.00. Sale Price,  
**\$1.98**

**Ten Cuban Heel Pumps, Kid Oxfords, Peggy Pumps, One-Strap Comfort Pumps, Mary Janes.** All cut to one price,  
**\$1.98**

**August Clearance Sale**  
Ladies' White Shoes and Oxfords—a special lot..... **\$1.39**  
Ladies' Black Pumps and Oxfords—values up to \$6. Special at ..... **\$1.49**

Not all sizes in every style but all low shoes generously reduced

**Goho's Shoe Store**  
1307 Derry Street  
Bell Phone 2386-R

### STRONGER MEN TAKE THE LEAD

They Have Nerves of Iron and Real Red Fighting Blood

Vital force is the material from which leaders in all walks of life are made, it is well worth getting and holding.

The health and nerve of the athlete is what Nature intended, every man and woman to have.

The blood of an athlete is pure and red, a strong heart pumps and drives it through his body. No wonder that every inch of his system is filled with energy and health, his nerves like iron, spirits high, hard tasks a pleasure and life one song of joy.

A leading Doctor says, "Everyone should feel this way. That if you are not red blooded, are nervous, all run down and on your last legs, for you to build up your blood and nerves with exercise, fresh air, nourishing food and Nature's great prescription Phosphated Iron, a real blood and nerve builder."

Then you will be there with vim and push to easily do the work that you now do on your nerves alone.

He also says, "To insure Phosphated Iron feeds the blood cells with Iron and Nerve force, and that leading specialists are now using it successfully all over the country, that it has sprung into almost instant popularity with the better class of doctors as one of the few remedies they can depend on to produce results."

Special Notice—To insure Phosphated Iron and their patients getting the genuine Phosphated Iron we put up in capsules only, so do not allow dealers to substitute any pills or tablets. For sale in Harrisburg by George A. Gorgas, 16 North Third street, and P. R. R. Station.

**SCOUTS IN SUMMER CAMP**  
Carlisle, Pa., Aug. 2.—Lead by John S. Byrne, scoutmaster, the Carlisle Boy Scouts, about thirty in number, have opened a summer camp at Laurel. It will be continued for several weeks and has been named Pershing, in honor of the head of the American Expeditionary Forces.

**YORK ENLISTS 75**  
The Harrisburg recruiting station yesterday entrained seventy-five men from York county for Columbus Barracks, Ohio. The men were entrained during July. They were accompanied to the city by the Boy Scout band.

**JUST BEFORE RETIRING**  
Take Horsford's Acid Phosphate. Relieves thirst and fatigue, refreshes the system and rests a wearied brain. Non-alcoholic. Buy a bottle. Advertisement.

### THE GLOBE TODAY THE CLOCK SAYS 801 THE GLOBE

## FOLLOW THE CROWDS TO

# THE GLOBE'S One Thousand Suit Campaign

You'll not be disappointed—the values presented have amazed all Harrisburg and surrounding towns—not only clothing buyers but many merchants as well.

Many may consider us foolish for lowering prices on such high grade stocks as ours—but in spite of an upward price trend THE GLOBE ADHERES TO ITS FIXED POLICY of "No goods carried over."

The all important thing to be borne in mind is the fact that GLOBE ORIGINAL PRICES are invariably lower than those quoted elsewhere, therefore these REDUCED PRICES mean more in dollars and cents than the sale prices indicate.

\$18.00 Suits Reduced to .....	\$14.50	\$28.50 & \$30 Suits Reduced to ..	\$24.50
\$20.00 Suits Reduced to .....	\$16.50	\$32.50 Suits Reduced to .....	\$28.50
\$22.50 & \$25 Suits Reduced to ..	\$19.50	\$37.50 Suits Reduced to .....	\$32.50
Men's \$3.00 Trousers.....	\$2.45	Men's \$4 and \$4.50 Trousers.....	\$3.95

**Wool Crash Lounge Suits**  
**\$10.00**  
Regularly worth \$15.00 and at present market prices considerably more

Smartly styled garments for young men and models for conservative men to give that "youngish" appearance. Comfortable—dressy—and they "wear like iron." Strictly all wool—regular and stout sizes are here.

**Goodbye Prices On All Straw Hats and Panamas**  
One lot of slightly soiled Straws of every description—All good styles—values to \$3.50, at ..... **\$1.00**  
All Straws and Panamas at Half Price

\$3.00 Straws	\$1.50	\$7.50 Panamas	\$3.75
\$4.00 Straws	\$2.00	\$8.50 Panamas	\$4.25
\$5.00 Straws	\$2.50	\$4.50 Toyo Panamas	\$2.25

## We've Broken All Records With Our Great Mid-Summer Shirt Sale

All previous high records have been smashed to smithereens. The values offered are to say the least most extraordinary and it is doubtful if ever such values will be equalled for a long time to come. Note the big savings. Buy them by the one-half dozen and dozen lots. Owing to the remarkably low prices at which these shirts are sold—None sent on approval—None charged.

Men's Silk Shirts at.....	\$2.85	Worth to \$5.00	\$6.50 Silk Shirts .....	\$5.00
Shirts at .....	\$1.95	Worth to \$3.50	\$8.00 Silk Shirts .....	\$6.95
Shirts at .....	\$1.65	Worth to \$2.50	Shirts at .....	\$1.35
			Regularly \$2.00	
			Shirts at .....	\$1.15
			Worth \$1.75	

## Big Savings on Boys' Clothing Now

THE GLOBE'S ONE THOUSAND SUIT CAMPAIGN always has a strong appeal for the parents of our boy friends, because they know that the clothes offered are matchless at their regular prices and at the greatly reduced prices are wonderful bargains.

Boys' Norfolk Wash Suits at .....	\$3.89	Boys' Suits Worth \$6.50, \$7.50 & \$8.50	\$5.00	Boys' Suits Worth \$10.00 and \$12.50 at .....	\$8.50	Boys' Wash Suits \$1.50 to \$2.50 Value	\$1.29
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White, tan, gray and blue Linens and Crashes—suits 7 to 16—Values up to \$6.50. A special assortment—nearly all sizes—ideal school suits—durably made garments. Odds and ends—all high grade suits—nearly all the famous Right-Posture Health Suits. Eton Norfolk, Russian Blouse and Middy models in percales, chambrays and crashes—suits 2 to 8.

**THE GLOBE**  
Everything For the Soldier  
Military Shop—1st floor