Curing Rheumatism with Radium

The latest means which European physicians are employing in the treatment of the soldiers in the trenches

By the Paris Correspondent of the POPULAR SCIENCE MONTHLY

RADIUM stores so much energy in its atoms that a thirtieth of an ounce has wrapped up in it about as much heat as a whole ton of good coal. That is one reason why radium is so puzzling. It is one of the heaviest solids we know—being many times heavier than iron. Yet it is continuously breaking up into an emanation which forms one of the lightest of gases. This emanation is even lighter than air. During the transformation, myriads of electrically charged particles are thrown off.

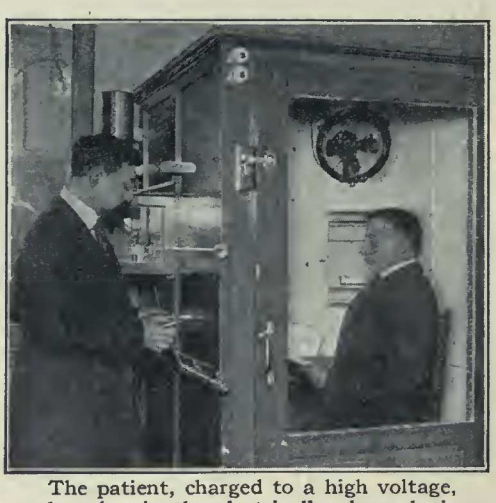
The particles that make up the emanation are hurled from the radium at enormous speeds. Imagine, if you can, a stream of these particles as they are hurtling through space at a speed approaching eleven million miles an hour! Then try to picture what would happen should anything get in their way. If it were not for the fact that the particles are infinitesimally small, no substance could withstand their bombardment for an instant. As it is, their impingement upon certain dense solids causes brilliant displays of light. Their impingement upon human tissues has a fundamental effect upon the life processes. Like X-rays, which the emanation contains in part, the rays of radium emanation have a curative effect upon certain skin affections. Their direct application in treating cancer, on the other hand, has been found under certain conditions to stimulate the action of the growth rather than the counter-action. But the use of the emanations, after they have once been emitted and consequently have lost some of their force, has been eminently successful in the milder forms of human ailments. Painful conditions brought about by rheumatism and gout, for instance, have been actually cured by applying the emanation internally. The gentler action throughout the system seems to stimulate the organs.

In Europe, radium emanations are employed in treating soldiers who suffer from severe muscular rheumatism because of the dank conditions in the trenches. The accompanying illustrations show the type of apparatus that is used in the treatment of these cases. The patient is placed on an insulated chair inside an air-tight booth, and is charged to a high potential by a small static electric machine. He is then supplied with a steady flow of air, which has passed over a quantity of radium. The electrically charged emanation emitted from the radium diffuses through the air, and certain of its rays are encountered by the patient, who draws them in with his breath. After reaching his lungs, they are almost entirely absorbed by his system, when they begin to effect their cure. During the treatment, the physician keeps

Below: The electric static machine by means of which the patient is charged

The physician is shown placing the radium tube in the booth from which it shoots its emanations into the air

the strength of the emanation in the supplied air at its proper value. For this purpose he uses an electric instrument which he reads through sighting apertures. The instrument is operated by the electrically charged emanation, so that the degree of the activity is indicated by the amount the instrument is affected. The instrument shown in the illustrations—an electrometer, it is sometimes called—can measure the activity in the air to a high degree of accuracy.



The patient, charged to a high voltage, breathes in the electrically charged air

Curing rheumatic ailments by the water of the now famous European springs is a treatment which has come down through many ages. Unknown to the travelers, the success of this treatment was principally due to the action of the radium salts which were dissolved in the springs. When this fact was discovered, the idea immediately suggested itself of using ordinary liquids in which the emanations could be dissolved. The liquids could be charged at stations distributed all over the world, and the treatment made available to almost everybody. This is now actually being done and small iron tanks containing the active liquids can be ordered by mail in Europe.

A Remarkable Rectifier for Charging Batteries on Alternating Current

EVERYBODY knows that used storage batteries can be recharged only on direct current. The automobile owner whose individual garage is supplied with alternating current instead, finds himself handicapped when it comes to recharging his own batteries. He has to take his storage batteries to a service station for recharging.

But a new gas rectifier has been placed on the market which will recharge even as few as three batteries inexpensively. It consists principally of a small bulb filled with nitrogen gas and containing electrodes of tungsten and of graphite. This bulb screws into a socket on a panel of the apparatus like the bulb of an ordinary electric light. The complete apparatus is connected with the alternating supply main, two leads on the other side of it are connected with the batteries, and a switch turns it on.

A Burglar-Alarm for Foiling the Automobile Thief

A PROFESSIONAL automobile thief can break through locks and guards and get almost any automobile started. But one thing he wouldn't count on would be a burglar-alarm clanging with him as he dashes down the street. Such an alarm for announcing his profession to the policemen that he would pass has been invented by William Connoly, of New York city. An electric circuit-closer is mounted directly under the driver's seat and the least pressure on it will close a circuit running to a large bell. All the parts are locked in places that cannot be easily reached, and the thief will be greeted with the clanging alarm as soon as he takes his seat.

Pressure on the seat closes an alarm circuit underneath so that a bell clangs loudly as the thief vainly tries to get away undetected