## APPLICATIONS OF RADIUM.

### In the Cure of Disease and As a Germicide.

Of what practical use is it? is the question that has repeatedly been asked since the wonders of radium became known to the public, whose interest in scientific discoveries usually wanes unless there is a satisfactory answer to this question. Realizing this, a correspondent of the London Times attempts to point out some of the possible future applications of radium. He remarks at the same time that a substance for which a hundred tons of ore must be worked up chemically to yield a single ounce can never be anything but expensive, and for this reason of rare and exceptional use in practical applications.

Some of the most hopeful and important of the uses to which radium can be applied are in the field of medicine. With all who use the x rays, whether physicists or doctors, the crying complaint is the impossibility of regulating the character of the rays obtained, so as to be able to repeat with certainty any desired result. It is for this reason that the use of x rays in the treatment of disease is attended capriciously sometimes with beneficial and at other times with decidedly harmful results. Radium, however, gives a beautifully constant and uniform supply of rays, and moreover possesses very many obvious advantages. Instead of the cumbrous focus tube nearly as large as a football, and the manifold and expensive items of an x ray outfit, a glass tube, somewhat smaller than a toothpick, containing from one-tenth to one-fifth of a grain of radium, has already been successfully employed in the treatment of cancer. Since the little tubes can be inserted into cavities no bigger than the nostril, it is obvious that a great many cases which could not possibly be successfully treated with x rays can easily be treated by radium.

It is well known that the radium rays have powerful germicidal actions, and small animals like mice and caterpillars only live a few hours under their influence. When radium, which may be put in a lead box an inch thick, is brought near the forehead of a person in a dark room, he experiences a flash of light on the retina of the eye, even when the eyelids are tightly closed. The blind apparently experience this sensation, also, and hence the explanation of the rumors that radium can make the blind see. But the serious attention of medical men is rapidly being concentrated on the possibilities of radium, and the successful treatment of many other diseases than cancer may be confidently expected in the near future.

The great problem of the application of radium for illuminating purposes belongs to the second class—that is, the application would be perfectly practical if the supply of radium were somewhat more abundant than it is at present. A small fraction of an ounce of radium, properly employed, would probably provide a good light sufficient for several rooms, which, at any rate during the present century, would never need renewal. The key to this surprising result, which may not be believed by those who have had no opportunity of experimenting for themselves, is to be found in the fact that certain phosphorescent substances are very efficient machines indeed for converting the energy of radium into visible light, whereas all known illuminants, even the incandescent gas-light, transform only a comparatively small proportion of the energy they consume into the desired form, the greater part being wasted as heat.

Rutherford has calculated from his own experiments and those of Curie that the energy stored up in one gram of radium is sufficient to raise 500 tons a mile high. An ounce would therefore suffice to drive a fifty-horse power car at the rate of thirty miles an hour round the world. This possibility of our being able in the future to control the store of energy in radium and to liberate it for use as required at any desired rate, is of course the most interesting feature of radio-activity at the present time. But it must be confessed that science holds out scant prospects of its fulfilment. No suspicion of its ultimate accomplishment has as yet loomed above the horizon of practical possibilities. If it ever became possible for radium, it would almost certainly be possible for uranium and thorium, elements which can be produced by the ton and which probably contain no less a store of energy than radium, but are evolving it at a vastly slower rate.—Public Opinion.