

its birth in Canada and has been accepted generally throughout the scientific world. Its authors were Dr. Rutherford and Mr. Soddy. Canada unfortunately has been unable to retain Mr. Soddy, but after going to England his work in the same direction bore good fruit; for he and Sir William Ramsay co-operating were able to verify a prediction of Dr. Rutherford's. They saw the spectrum of radium grow out of the spectrum of the emanation of radium, i.e. an actual transformation of matter took place before their eyes. Dr. Rutherford had based his prediction on the fact that helium is found on the earth only in connection with elements that emit the radiations which have been here spoken of.

Other transformation have been since observed. More surprising, perhaps, because not anticipated, even in speculation, was the discovery, three years ago by M. Curie and M. Laborde, of the enormous amount of energy latent in the atom of radium and released by its disintegration; an amount sufficient to reconcile the divergent views of Physics and Geology on questions connected with the Sun's heat.

The accidental death of M. Curie a month ago in Paris must be a cause of regret to lovers of Science, while the severance of the remarkable partnership in heart and mind of those who by their scientific eminence, whether separately or in co-operation, have become familiar to all as "the two Curies" and have been known in ordinary life as M. and Mme. Curie must touch all hearts.

*Comparison of Recent Advances in Physical Science.*

In briefly noting the advance in one department of Physical Science since the foundation of the Society, I will take for a standard of comparison, Prof. Tait's work published in 1876 on the then "Recent Advances in Physical Science."

It had long been established, by means of the balance, that in spite of appearances, as in the case of a burning candle, it was impossible to destroy matter, just as it was impossible to create it. This principle of indestructibility is often called the "Conservation of Matter."

If we define "energy" as the capacity of doing work—such work as engineers delight in—and measure it, the companion principle of the "Conservation of Energy" asserts that it is impossible to increase or diminish the quantity of energy in the Universe. This principle was established about the middle of the last century.

But while the quantity of energy cannot be increased or diminished, the form is readily changed as when a water-fall is used to drive street-cars, or to supply electric light or heat. The Transformation of Energy was fully accepted along with its Conservation. To this there was however at the time of Tait's book no companion principle for matter,