

separated such a distance relatively from the nucleus of the atom, we wonder perhaps why under ordinary conditions these particles do not fly away from their positions or orbits. This cannot be on account of balanced forces existing in the atom which hold them in place.

In the heavier radio-active elements, these enormous forces are never completely balanced. For this reason electrons and nuclei are continually being shot off from the atom at a speed comparative to that of light. Conclusive experiments have shown that radium, the element which is making for itself a high place in medicine, ultimately becomes changed into lead. In its transformation it evolves helium, a gas which is seven times lighter than air, non-inflammable, and is therefore the ideal gas for filling balloons and airships. The presence of helium in petroleum gas, which is the present great source, is believed to be due to the disintegration of radium and similar elements.

This property of uranium is utilized by geologists in calculating the age of the earth. They measure the amount of helium entrapped in the rocks which were formed when the earth was still hot. They also determine the amount of uranium enclosed in the rocks. Moreover they know how much helium is given off by a gram of uranium in one year. Thus by simply dividing the total amount of helium by the annual supply, the age of our planet may be determined.

Man has not yet discovered a means to hasten or stop the atomic disintegration of matter. Moreover, if he should find a way to speed it up before he had discovered a method of controlling it perfectly, a means would be found for the destruction of our earth and the disruption of the whole solar system. Sir Oliver Lodge, who has dealt with things more tangible than spirits, has estimated that could the enormous intermolecular forces existing in a pebble be set free all at once, there would be enough energy available to lift the whole British Navy to the top of the highest mountain.

This my friends is no mere speculation or phantasy. We have a universe governed by certain natural laws. To have a consistent universe, these laws must hold for the guidance