

PHYSICS

Alpha Particle Tetrahedrons Build Up Atom Nucleus

Prof. Latimer Summarizes Knowledge of Heart of Matter And Presents New View Satisfying Present Information

SCIENTISTS were given a look into the heart of matter and shown diagrams of the structure of the atomic nucleus when Prof. Wendell M. Latimer of the University of California presented to the American Association for the Advancement of Science meeting at Pasadena, Calif., a new theory of the way in which the central portion of the atom is put together.

This is the ultimate and final step determining just what is the structure of the material things about us. In the past few years scientists have carried their probings into the makeup of matter step by step into the realms of the minute in size. Beneath the seemingly solid surfaces of metals and other substances with which we have daily contact, they first found a multitude of regularly arranged crystals, row on row of them, each made up of molecules, which in turn were shown to be definite arrangements of atoms. X-rays have aided greatly in this exploration of sub-microscopic crystal worlds. The atom was shown to be fashioned as a very heavy nucleus surrounded by very light particles or waves known as electrons. Prof. Latimer has assumed the task of discovering the architecture of that internal citadel of the atom which has kept out prying scientific explorers.

Previous investigators have pictured the nucleus of the atom in terms of the number of protons, or hearts of hydrogen atoms, and electrons that are present, Prof. Latimer explained. In iron, for instance, the nucleus was known to consist of 56 of the protons, as the hydrogen nuclei are called, and 30 electrons or units of electricity. The radio-active disintegration of elements like radium gave a clue to how the protons and electrons were arranged in the nucleus. Disintegrating matter gives off both unattached electrons in pairs and bundles of four protons and two electrons known as alpha particles. These particular bundles known as alpha particles are known to be also the atomic hearts of helium, the inert gas that is used to inflate American airships.

Other research has shown that these protons and electrons are spinning and opposite spins play an important part in keeping the nucleus together.

These were the materials used by Prof. Latimer in building together his new view of the heart of matter. First he arranged alpha particles in a tetrahedral pattern, that is, at the corners of a triangular pyramid. Then he assumed that each of these alpha particles is itself a tiny tetrahedron of four protons with a pair of electrons happily spinning at its center. This builds a nuclear structure that satisfies all science knows about the atomic nucleus. Prof. Latimer presented it as the best picture that can now be drawn of the ultimate in the structure of matter.

Science News Letter, June 27, 1931

ASTRONOMY

Size of Newest Planet Is Still Undetermined

ASTRONOMERS are not quite certain of the size of the planet Pluto which was discovered last year.

Dr. E. C. Bower of the University of California reported to the American Association for the Advancement of Science in Pasadena, a study of gravitational pulls between Pluto and the other members of the solar system which unfortunately does not give conclusive results. The most probable result is that Pluto has seven-tenths of the mass of the earth.

Dr. Bowers explained that an observation of the planet's disk in the hundred-inch telescope at Mt. Wilson probably offers the best chance of determining its size. Since with poor seeing conditions at Mt. Wilson no disk could be seen, Dr. Bower believes that the outermost planet of the sun's family cannot be larger than eight-tenths the size of the earth. If, under the best conditions for astronomical observations, Pluto does not appear to be more than a mere point of light, it cannot be heavier than a tenth of the earth's mass.

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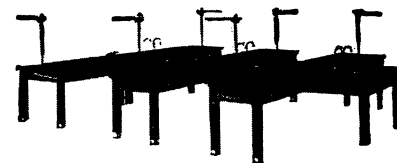
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