

THE CONSTITUTION OF ATOMS

THE Physical Society of London visited Cambridge, and at a meeting in the Cavendish Laboratory, June 20, Sir J. J. Thomson, the president, gave information of the results of some important experiments he has been making with regard to the production of very soft Röntgen radiation by the impact of positive and slow cathode rays. According to the report in the London *Times* Professor Thomson said he proposed to give them an account of some recent experiments whose object it was to fill up a gap in the kind of radiation that they had at their disposal upon investigation of the properties of the atom. The study of Röntgen radiation had enabled them to prove the existence of two separate rings of electrons, one inside the other; the one was responsible for what is known as the K kind of radiation, and the other had the L characteristic, but the L characteristic was so much softer than the K that if they were to consider what would be likely to be the properties of the radiation given out by a third ring, if the rate of increase in softness was anything like the same proportion the radiation from the third ring would come well within that region of radiation which at present had not been studied, and if they command a continuous series of radiations, extending from the visible light which affected the outer ring of electrons right up to the hardest region of radiation, they would be able to see how many separate vibrating systems, how many rings of electrons there were inside the other, and, more than that, they would be able, by the study of that radiation, to gauge the number of electrons in each ring, so that this study promised to give them the means of determining the distribution of electrons throughout the atom. In the experiments two methods had been employed. The first was the production of Röntgen radiation by the impact of positively charged atoms. By availing himself of the very remarkable sensitiveness of the Schuman photographic plate they had been enabled to get unmistakable evidence that as the positive rays impinged against a surface they gave out a type of Röntgen radiation. Professor Thomson de-

scribed at length the apparatus he employed, which in this case was a Crookes tube, and the experiments he made. His second method was by the impact of cathode rays, and they arranged the experiment so that they had the speed of the cathode rays very much under control. In this experiment an ordinary Röntgen ray tube was employed. The photographic method, Professor Thomson continued, was rather time wasting, and they had lately tried experimenting with a substitute for the photographic plate, and if they succeeded with those experiments they probably would be able to get on much more quickly. But even with the photographic plate they hoped to make a series of experiments which would enable them to find how many rings of electrons there were in an atom.

HENRY HEMPHILL

WE have just received notice of the death, July 25, at Oakland, Cal., of Henry Hemphill, in his eighty-fifth year.

Mr. Hemphill was born in Wilmington, Del., in 1830, but for many years had been a resident of the state of California. He was a mason by trade and took great pride in his proficiency. More than fifty years ago he became interested in the shells of the Pacific coast and formed one of a group of enthusiastic collectors which included Kellogg the botanist, Harford, Voy, Stearns and others, of which he was the last survivor. His trade brought him in, at California union wages, such a good income that he could not only lay away a fair nest egg for his old age, but take long vacations. During these periods he visited Florida and all parts of the Pacific coast south of British Columbia, and became one of our most expert collectors of mollusks. The genus of slugs, *Hemphillia*, was named in his honor by the late W. G. Binney, and a host of species commemorate in like manner his success as a collector.

He published but few papers himself, but was the cause indirectly of much publication by others. He had a keen eye for relationships and differences, and at times mounted on large tablets series of land shells with radi-