cannot, therefore, be given to the activities of the Colston Research Society in the city of Bristol, the object of which is the promotion of research in its University. This Society, under a slightly different name, was originally founded in 1899 for the purpose of promoting the cause of a university at Bristol, and it played a most influential part in securing the foundation of the University ten years later. It then turned its attention to the assistance of a specific branch of university activity and chose that of the promotion of research.

The Society met for its annual dinner and collection on June 1 under the presidency of Mr. Claude B. Fry, with Prof. Flinders Petrie and Sir Richard Gregory as the principal guests. The collection, which amounted to 669*l.*, brought the total sum collected since its inauguration twenty-three years ago up to nearly 12,000*l.*

The annual sum of about 600*l.*, which is thus available for research, is allocated to the various departments of the University of Bristol by a joint committee of the Society and the University. It is interesting to note that, while the greater part of the funds collected is provided by local merchants and industrial firms, the Society accepts the term research in its widest sense and has recently made awards to the arts faculty, which will be continued so far as funds permit.

In addition to the collection, an important extension in the activities of the Society was made by the president for last year, Mr. Ernest Walls, which seems likely more and more as years go on to cement the relationship between the University and local industries. This act was the foundation of a number of annual Colston research fellowships. These fellowships are post-graduate in character and are earmarked to a particular faculty or branch of research, or to a particular research problem. In those cases in which the research problem is of an industrial character and carried out, with the consent of the supervising professor, at the wish of the firm, additional funds for apparatus and material are also available. The donor of a fellowship has access to the research work and receives the results of the work twelve months prior to publication. During last year fellowships were provided by the Imperial Tobacco Co. (botany), Messrs. J. S. Fry and Sons (engineering), Christopher Thomas Bros. (chemistry), Messrs. Packer and Sons (chemistry), Mr. Frank Cowlin (medicine), and Messrs. E. S. and A. Robinson (chemistry). That the scheme is an undoubted success is borne out by the fact that at the recent meeting of the Society it was stated that five of the above fellowships were being renewed for a second year and that two new fellowships had been promised, one from Messrs. Carsons, Ltd., and the other from Messrs. William Butler, both in chemistry.

To those conversant with the relations between universities and industry in a country like the United States, this may seem to be a very small organisation; but in the present depressed state of the finances of British universities, the existence of one Society rallying to the support of the most essential function of a university is exceedingly encouraging, and the scheme may be commended to the notice of other centres of learning.

Radiation Theory.

ON Monday, May 28, a lecture was delivered at the University of Edinburgh by Prof. H. A. Lorentz, of the University of Haarlem, on "Primary and Secondary Radiation." In the course of his remarks, Prof. Lorentz said that in former times the radiation of light was held to be due to the presence in the luminous source of small particles vibrating about positions of equilibrium; in the electromagnetic theory of light this idea became more definite, in that the oscillating particles were supposed to be electrically charged. The progress made in the last few years has shown that, in many cases at least, this explanation of radiation can no longer be maintained.

In Bohr's theory of spectral lines, the emission of light is due to the transition from one stationary state of an atom to another. The frequency of the emitted radiation is determined by the change in the energy of the atom, and is widely different from the frequency really existing in the atom, in which the electrons freely revolve around the nucleus. When light is emitted by a luminous body, and, in general, when we are concerned with the original production of waves, we can speak of a *primary* radiation, whereas the term *secondary* radiation can be applied to those cases in which particles that are struck by incident rays thereby become centres of emission.

There is perhaps but one case of primary radiation for which the old theory still holds, namely, the emission of electromagnetic waves by an antenna. If, as has been shown by the experiments of Tolman and Stewart, an electric current in a metallic wire consists of a motion of electrons, then this must also be true of the alternating currents in the antenna, so that here the oscillatory motion of the electrons is seen to produce waves.

As to the secondary radiation, this appears in many cases to conform to the classical laws. This can be illustrated by the consideration of (1) Huygens' principle and his construction for the progression of a wave front, (2) the propagation of light in a system of molecules, (3) the scattering of light by molecules (blue of the sky, Lord Rayleigh's formula), (4) the scattering of X-rays (Barkla's experiments), (5) the diffraction of X-rays by crystals, it being possible, as has been shown by W. L. Bragg and Bosanquet, to calculate in this case the intensity of the secondary beams by means of the old theory.

Even for the primary radiation of light, the classical theories need not wholly be abandoned.

Soil Acidity and Plant Distribution.

AN important series of studies on the hydrogen ion concentration of the soil and its relation to plant distribution has been published by Carsten Olsen (*Compt. rend. Lab. Carlsberg*, xv., 1923). These studies deal with the hydrogen ion concentrations of a series of Danish soils covered by natural vegetation, the observed range being from P_H 3·4 to 8·0. The composition of the vegetation is found to be very closely correlated with the hydrogen ion concentration of the soil, and the author considers that the distribution of the more important species may be largely determined by this factor. The number and density of species in a given place are also found to be greatest when the soil reaction approaches neutrality. Olsen further points out that the vegetation of alkaline soils poor in mineral nutrients bears no resemblance to that of very acid soils poor in nutrients. This section of the paper is very impressive in its wealth of data, and it includes exhaustive tables showing vegetation composition in relation to P_H and also a large number of partial soil analyses. Only those who have used the field methods employed by Olsen can really appreciate the extent and thoroughness of his investigations.

The author then deals with the growth of typical