more accurately the moments of a grouped frequency distribution (*Proc. Math. Soc.*, **29**, and *Biometrika*, **5**, 1907). For these, and for his tables of the ordinates and integral of the normal curve given in "Tables for Statisticians", his name is known to almost every student of the subject. But his work really covered a considerable range, and we may note, amongst others, papers "On the Statistical Rejection of Extreme Variations" (*Proc. Math. Soc.*, **31**), "On the Use of Auxiliary Curves in Statistics of Continuous Variation" (*J. Stat. Soc.*, **63**, 1900) and on "Graduation by Reduction of Mean Square Error" (*J. Inst. Actuaries*, **48**). Of recent years he does not seem to have written so much on statistical matters, but some time since he made a return to pure mathematics and published through the Oxford Press a small book "From Determinant to Tensor" (1923).

G. UDNY YULE.

News and Views

Nobel Prize for Chemistry: Prof. P. Debye

THE award of the Nobel Prize for chemistry for 1936 to Prof. P. Debye will give great pleasure to his friends everywhere. Debye's contributions to science have been many, and have covered a wide range of subjects, but they all have certain features characteristic of the man who made them. He combines, in a remarkable way, ability in mathematical analysis with a sturdy sense of physical realities, so that he is able to make bold approximations without invalidating the formulæ at which he arrives. His early training as an engineer, followed by his training in theoretical physics under Sommerfeld, must have contributed to this striking combination of qualities. They have been shown equally by his all-important work on specific heats, on dipole moments in gases, and on the theory of strong electrolytes. He has made notable contributions to X-ray analysis, in particular the 'powder-method', the theory of scattering of X-rays by molecules, and the effect of temperature on X-ray diffraction. He is a delightful and inspiring lecturer. All who know him have the double pleasure of seeing the award so appropriately bestowed, and of being able to congratulate a kindly and delightful friend. Prof. Debye received the Royal Society's Rumford Medal in 1930, and in 1933 was elected a foreign member of the Society.

Nobel Prize for Physics: Prof. Victor F. Hess

THE Nobel Prize for physics for 1936 is divided equally between Prof. Victor F. Hess of Innsbruck for his work on cosmic radiation and Dr. C. D. Anderson of Pasadena for his discovery of the positron. It was Prof. Hess's experiments in manned balloons in 1912 which first definitely proved the existence of penetrating rays which enter the earth's atmosphere from outside. This conclusion followed from the discovery that the ionization in a closed ionization chamber at a height of 4,000 metres was greater than at sea-level, and above this increased rapidly. Hess also showed that the ionization due to this new radiation decreased neither during the night nor during an eclipse of the sun, thus showing that the rays cannot come directly from the sun, so long, at any rate, as the rays travel in straight or nearly straight paths. It was this pioneering work of Hess which led to the view that the penetrating rays were really cosmic in origin. In more recent years, Prof. Hess, besides contributing much to the subject of atmospheric electricity, has paid especial attention to the study of the variation of the intensity of the cosmic rays with time. This work demands very accurate measurements over a period of years, since the variations are complicated and small in magnitude. From these and other similar investigations, a small daily variation has been established with certainty, and probably also a quite small variation with sidereal time of the order of 0·1 per cent. The existence of such an effect was predicted by Compton as a consequence of the assumption that the rays had their origin outside the Galactic System, and about the expected variation was found from the measurements of Hess and Steinmaurer. Prof. Hess's work on cosmic rays has extended over a period of more than twenty-five years, and it is with very great pleasure that all workers in this field now see this work receiving its due recognition.

Dr. C. D. Anderson

DR. ANDERSON's discovery of the positive electron or positron arose also through the study of cosmic radiation. During an investigation of the properties of the rays by means of a cloud chamber in a strong magnetic field, Anderson found certain photographs which revealed the tracks of particles with about the same ionization, and so about the same mass, as electrons, but which were curved by the magnetic field in the direction corresponding to particles with a positive charge. This exceedingly important result was published in 1932 as a short communication to *Science*, in which Dr. Anderson wrote: "For the interpretation of these effects it seems necessary to call upon a positively charged particle having a mass comparable with that of an electron." Thus a new member was added to the select list of fundamental particles. Subsequent work has shown, not only that about half the cosmic ray particles are positrons, but that they are also often produced as one of the partners of pairs of positive and negative electrons, when gamma-rays of high energy are absorbed by matter. These positrons do not live long, as they readily combine with other negative electrons to form more radiation. The discovery of