

so long ago as 1869, the Royal Astronomical Society in 1873, and was elected a fellow of the Royal Society in 1909. To many Cambridge men he was well known as the director of the Cambridge University Scholastic Agency, which he founded as a private venture in 1884, long before the official Appointments Board; and in connexion with this he worked out an insurance scheme.

L. J. S.

WE regret to announce the following deaths:

Sir Henry Christopher Mance, past president of the Institution of Electrical Engineers, on April 21, aged eighty-six years.

Admiral Sir John Franklin Parry, K.C.B., formerly Hydrographer of the Navy, and president in 1919 of the International Hydrographic Conference held in London, on April 21, aged sixty-two years.

### News and Views.

IN our supplement this week Prof. Eddington deals with a subject which has become of the greatest importance in cosmic physics; namely, the source from which the stars derive the enormous quantities of energy which they radiate continuously into space. The character of this source and the manner in which it is tapped are fundamental questions which lie at the very heart of the problem of stellar evolution, for so long as they remain undetermined the problem cannot be solved. Indeed, the very idea that stars evolve at all is derived from the observation that they radiate more energy than they receive from extraneous sources. Internal energy, or its equivalent, must, therefore, be transformed into radiation, and the change in the star brought about by the transformation is its course of evolution. Historically, it is true, the problem has been attacked most strenuously by observing the actual course of the change, regardless of its origin, on the assumption that the statistical distribution of stars with respect to physical characteristics represents the history of a single star. This method of attack, however, so long as the fundamental problem of the source of stellar energy is ignored, can, by its very nature, lead to nothing more than a description of a process of which the mainspring is unknown; and it now appears doubtful whether even that degree of success has been attained, for our confidence in the identity of a star's course of development and the statistical curve has been rudely shaken. It is therefore a matter for satisfaction that we are at last in a position to deal with the problem radically, and Prof. Eddington's admirably impartial and penetrating discussion clears the ground for action.

THE one definite conclusion that emerges from the researches of Prof. Eddington and others is that if the history of a star follows the statistical curve, or any curve approximating to it, there must be a transformation of matter into radiation by annihilation of electrons and protons, unless current theories are hopelessly on the wrong track. The existence of such a transformation, revolutionary as it would have appeared a few years ago, has perhaps been accepted somewhat too readily, and Prof. Eddington very opportunely directs attention to some of the difficulties which it involves. It may, as he says, be possible to wriggle out of them, but it would be much more satisfactory if they released us of their own accord. It may be questioned, however, whether he has given sufficient weight to the physicist's objection to a critical stellar temperature

of transformation; at any rate, the physicist is entitled to invite him to pursue his reply to its logical conclusion. Speaking of the less drastic change of hydrogen into helium as an example, he says: "But helium exists, and it is not much use for the critic to urge that the stars are not hot enough for its formation unless he is prepared to show us a *hotter place*." The critic might retort that protons and electrons also exist, and presumably were created, and if a critical temperature suffices for their destruction, it might also permit their creation. If that process also takes place in the stars, the whole problem takes on a different aspect. But whether occurring in the stars or elsewhere, the creation of matter can scarcely be ignored in a cosmology which gives a prime importance to its annihilation.

ON May 6 Prof. Sigmund Freud reaches his seventieth birthday, and the occasion is being celebrated by the International Psycho-Analytical Association, branches of which are now established throughout Europe, in the United States, and in India. A sum of money raised by the various constituent societies of the Association will be presented to Prof. Freud to be used by him in aid of some work or individual worker in the field of psycho-analysis, and a large number of his co-workers and associates from various countries will be present in Vienna on May 6 to take part in the commemoration. Further, there will be special articles in the two European journals devoted to the study of psycho-analysis—*Die Zeitschrift* and *Imago* (Vienna)—and also in *The International Journal of Psycho-Analysis* (London), written by intimates and co-workers of Freud. Almost synchronising with his birthday is a new development in London in the shape of the first Psycho-Analytic Clinic, to be established this month by the Institute of Psycho-Analysis, which will become, it is hoped, a worthy memorial to Freud's work and inspiration. In his own town of Vienna (Freud's actual birthplace was Freiburg, but since 1860 he has been associated with Vienna), of which he was made a freeman about two years ago, the municipal authority wished to make some public recognition of its great citizen, but Freud declined the honour. Indeed, it is characteristic of Freud that he has always refused to come personally into the limelight, no matter how far and wide the echoes of his work reverberate.

To scientific workers it is unnecessary to stress the significance of Freud's work: it will suffice to say