Germany, in the department that dealt with the surrender of airships. It is probably no secret now, that as a result of his experience there he was convinced of the folly of the school of thought, then in the ascendency, that all the Zeppelin work then on hand should be destroyed and the organisation disbanded. Just how far his opposition to this policy influenced the official decision to reverse it, one outside those august circles is not permitted to know, but the many tributes that members of the Zeppelin Companies' staff have paid to him show that they have a full appreciation of his courage and far-sightedness upon this occasion.

One of Richmond's earliest problems at Cardington was that of carrying out full-scale experiments for the elucidation of many unsolved problems upon the co-ordination of wind-tunnel and full-scale test results. At this stage there were alarming discrepancies, and the existing information upon heavier-than-air craft was not of great use, as the conditions were so essentially different. The *R34*, upon which he carried out his experiments, then provided a fresh problem by breaking away from the mast and proceeding upon her now historic flight over the North Sea and back. The present-day British mooring system shows many signs of Richmond's ingenuity in dealing with the weaknesses made apparent by that mischance. It is no mere expression of opinion to say that it is completely successful. During last spring the *R101*, at the new mooring-mast, weathered one of the worst gales experienced in Great Britain for many years past.

Richmond's position as designer of the *R101* presented him with many problems that would have defeated men of less breadth of vision. He had to hold the balance between a set of conflicting requirements that must have been almost unparalleled in the history of scientific research. He had to hammer out an almost entirely new principle of construction that should overcome the weaknesses in previously accepted methods, as made apparent by the failure of the *R38* some years before. His materials were new and none too thoroughly investigated then. It was decided that every theory about which there was any possible doubt should be supported by a test upon a full-scale section of the structure. He had to satisfy a panel of independent experts who would have the eventual responsibility of certifying his ship as airworthy. Finally, he had to collaborate, as the necessity arose, with the designers of the sister ship, the *R100*.

During the last few years Richmond had been lecturing upon airship design at the Royal College of Science, South Kensington, and whatever the future of airships may be, the information disseminated through that source, and his students' personal remembrance of their teacher, will remain as, at least, one monument to his memory. "Operæ pretium est."

WE regret to announce the following deaths:

Dr. D. Adamson, past president of the Institution of Mechanical Engineers, on Oct. 11, aged sixty-one years.

Dr. H. R. H. Hall, Keeper of the Egyptian and Assyrian Antiquities, British Museum, on Oct. 13, aged fifty-seven years.

Prof. Paul Wagner, director of the Agricultural Research Station at Darmstadt from 1872 until 1923, on Aug. 26, aged eighty-seven years.

Dr. C. Powell White, for some years director of the Helen Swindells Cancer Research Laboratory at the University of Manchester, and pathologist at the Christie Hospital, Manchester, and a member of the executive of the British Empire Cancer Campaign, on Sept. 26, aged sixty-three years.

News and Views.

A FEATURE of the developments of electron theory dealt with by Mr. R. H. Fowler in the Supplement which we publish in this issue of NATURE is the extent to which older ideas have proved amenable to the requirements of quantum mechanics. The 'electron cloud', for example, has persisted, to provide, with certain modifications, the physical picture upon which most aspects of the theory are still developed, and the conception of a work-function for the passage of an electron through a surface has again emerged in the expressions for thermionic emission in a form little different, for practical purposes at least, from its original one. The amount of co-ordination and clarification of ideas effected by the quantum mechanics is nevertheless enormous, and it appears the more remarkable when the wide range of the electrical properties of metals to be explained is taken into account. Whilst there are still outstanding problems, notably in connexion with supra-conductivity and magnetic phenomena, as well, of course, as the fundamental ones referred to by Mr. Fowler at the end of his lecture, it will probably be generally admitted that his expectations are not unduly optimistic. Mr. Fowler has very modestly done less than justice to the importance of his personal contributions to the subject, which have been published in "Statistical Mechanics" and in numerous papers in the *Proceedings of the Royal Society* and the *Proceedings of the Cambridge Philosophical Society*.

As will be seen from Mr. Fowler's May lecture, the lines of experimental research which theory indicates as being probably most profitable at the present time would seem to be the electron emitting properties of surfaces, the properties of single crystals, galvano-magnetic phenomena generally, and supra-conductivity. Probably no stimulus would be required for the first two in any event. Both have practical applications of much importance, one in connexion with thermionic devices and photoelectric cells, and the other as the rational line of approach to a proper understanding of the elastic and electrical properties of the ordinary metals of engineering practice. The investigations of the magnetic properties of materials that are called for do not, however, appear likely to be capable of such applications, and the same is true