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Editorial

THE JOURNAL is making news this month in three ways: (i) by reverting to its original 1897 title of **THE AERONAUTICAL JOURNAL**; (ii) by an extension to the JOURNAL to cope with an increasing volume of papers and records of lectures; and (iii) by starting a series of **Second Century Papers**.

These innovations were arranged during the late Adrian Lombard's regrettably short Chairmanship of the Journal and Publications Committee. I knew Adrian very well and had only just returned from a ten-day visit to Russia with him when he died quite suddenly in July after collapsing in his office. He was a staunch supporter of the Society and brought his unbounded energy and imaginative drive into the Publications Committee. I, too, believed in what he was doing and hope to continue at least some of his ideas during the period when they could come to fruition.

Details of the extension to the JOURNAL were given on page LXXXV of the December issue and in the Secretary's News Letter. Without this extension this series of forward-looking papers for the Second Century would not have been possible. Lombard immediately grasped the significance of the Second Century papers and backed the venture with wholehearted enthusiasm. From the letters he wrote to the prospective authors from May to July 1967 it was clear that new concepts were forming in his mind. He recognised the importance of inspiring young engineers to imaginative ventures and he was acutely aware of the need for a favourable creative environment for young minds. Future possibilities that attracted him included the evolution of computers to assist design in hitherto unforeseen ways, and to foster directly linked minds in engineering organisations. He was keenly interested in animal systems, and in one lecture compared the by-pass ratio of a bird's propulsive system with his own jet engines. The latter were of the order of 8:1; a bird's he deduced to be 10 000:1.

Such ideas are highly speculative and unlikely to win credit in weekly design or production meetings, yet such forerunners may contribute to a revitalised attack on problems of the future. As Allen points out on page 9 in his paper introducing the series, the accelerating pace of development from a new physical discovery to its engineering exploitation brings speculative ideas much nearer to the drawing board than is generally believed. As a professional body of scientists and engineers we are primarily concerned with the major task of taking new concepts through the obstacle race of feasibility studies, laboratory and prototype stages, subjecting each phase to a critical (cost-effectiveness) analysis. This focuses us mainly on the near future, up to, say five years ahead. Nevertheless, once in a while, we should peer beyond the horizon so that we do not miss a big chance by keeping our heads down too long. But speculation raises problems; and in 1866 the Society realised a possible danger and stated, "The Council may expect that by avoiding all public display and rigidly excluding any matter that may seem useless in forwarding the science or that has the slightest chance of

giving rise to ridicule". Yet, as Dyson* has warned, "When the great innovation appears it will almost certainly be in a muddled, incomplete and compromising form. To the discoverer himself it will be only half-understood and to everyone else it will be a mystery. For any speculation which does not at first glance look crazy, there is no hope". To dare to speculate without incurring ridicule is a challenge that we rarely face up to properly. Not that the Second Century Papers are intended only to introduce speculation, for they start from considered analysis of present-day problems and then show how they may develop and the apparent difficulties might be overcome. But we are encouraging authors to speculate if they wish. Speculation requires courage and Lombard certainly had this.

In the twenty or so papers of this forward-looking series, authors will be examining the several ways in which aeronautics may change in the future. Some authors will cover the emergence of project opportunities either by new classes of hypersonic transports or personal VTOL vehicles or even the re-introduction of forgotten things such as flying-boats and airships. Other authors will seek out improvements in techniques of guidance, materials and structures. In another kind of approach papers will deal with technical advances in computers, management of design and re-interpretation of the atmospheric structure in all its effects on aircraft. It is hoped that a reasonable coverage is being provided and that even radical possibilities such as new forms of atomic energy, construction and power transference will be presented.

It is likely that in some controversial areas authors will advance ideas which may be difficult to accept. It is expected that a lively correspondence will result, and if some *startling ideas emerge we hope their originators will send in well-written papers which can be published in the JOURNAL*. By such means we can take a step forward into the next aeronautical century. It will be a vastly different century from the last, which was characterised, at the start, by inadequate resources of power and technology but with high hopes, encouraged by the optimistic imaginative writers such as Jules Verne, and later by the scientific advances in electromagnetism, thermodynamics and radioactivity. In marked contrast, we now have potentially too much technology and inadequate discriminatory powers in deciding what should be done; forecasting the future has recently become a highly mechanised operation which may have some deceptive consequences. Perhaps the basic objectives and priorities in aeronautics will have to be worked out anew and this will influence research policy and how problems are tackled. Although the scene is now so different, the challenges are as great, or greater, than any before.



Chairman, Journal and Publications Committee.

*Dyson, Innovation in Physics, *Scientific American*, September 1958.