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BOOK REVIEWS

Collected Works of Robert T. Jones. NASA TM X-3334 (February 1976).

TO ANY aerodynamicist of more than about ten years vintage R. T. Jones is the familiar almost legendary name of someone whose prolific output dating from the mid-thirties is studded with original ideas of great seminal importance. For example, he was one of the first to investigate the effects of gusts on aircraft dynamics using Heaviside's operators, he first demonstrated the importance of wing sweep at high subsonic speeds, he first established the theory of slender wings by adapting Munk's theory for airships, he first propounded the supersonic area rule, first established important minimum drag conditions for supersonic flight, and has developed a convincing case backed by theory and experiment for the use of oblique wings (i.e. yawed relative to the fuselage) for supersonic aircraft which may well be a characteristic feature of the next generation of supersonic transport aircraft.

He is clearly a remarkable aeronautical scientist and engineer, but how remarkable he is becomes even more evident by this volume of his collected works to mark his 65th birthday. The reviewer is not aware of any other U.S. scientist for whom the NASA has published his collected works in this way and there can be no doubt from a study of the volume that he deserves this signal honour.

From the excellent Introduction by his old colleague Professor William R. Sears one learns that Robert Jones had no formal University training and no first degree! From an early age he wanted to be in the aviation business and he successively worked in a flying circus, in the design office of a small aircraft firm and ran an elevator during the Depression years whilst studying aerodynamics at home and in evening courses under Dr. Munk. He then got a temporary job with the NACA Langley Laboratory which later was made a permanent one in spite of Civil Service difficulties over his lack of a first degree. Yet his work from an early age showed a grasp of mathematical techniques, physical insight and engineering skills that reflect a mind that is not only first class but is thoroughly well trained. One can only explain the seeming paradox as follows. It can be argued that the main object of a university education is to teach a student to continue to teach himself for the rest of his life; Robert Jones evidently did not need formal university education because from an early age he had a remarkable facility to teach himself and he knew where to go for expert advice in his studies when he needed it.

One is not therefore surprised to note that when he turned his attention to fields other than aerodynamics and flight mechanics he was able to produce characteristically original work. Of the 64 papers in this volume, 4 are devoted to geometrical optics and the work that he did designing and making small relatively cheap telescopes of remarkable power and an unusual form of wide angle lens, 4 concern the theory of relativity to which he demonstrated the advantages of applying conformal transformations for problems of accelerated motion and 4 deal with the bio-dynamics of blood flow. As a final illustration of his versatility he is a keen maker of violins of concert standard and a paper describes his examination with simple equipment of the frequency responses of two of the violins that he has made and his interpretation from them of the qualities that made one better than the other.

Robert Jones is perhaps the last of a line of "self-made" people of genius who have contributed so much to engineering science and particularly to aeronautics. No young man today of his calibre could possibly escape a formal university training. It is difficult to say whether this is a bad thing or not, there are a considerable of men of great creativity who have had a university education with no evident ill-effects; on the other hand it is clear from Robert Jones' example that such an education is not essential for the very exceptional person of truly outstanding ability.

Those concerned with fluid mechanics in general and aerodynamics in particular will be well advised to get a copy of this book as a fascinating source book of one individual's fruitful ideas that were not only important in the past but are still rich with potential development for the future.

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Control of Flow Separation, PAUL K. CHANG. Hemisphere, Washington, 1976.

ALTHOUGH this book is not directly concerned with heat and mass transfer, the control of flow separation should be of interest to workers in convective heat transfer. Unfortunately I cannot recommend this particular book to such workers. Each chapter appears to consist of a series of precis of published papers on various aspects of flow separation and its control. The bulk of these papers were published over 8 years ago; more recent work is listed under supplementary references but is not discussed. Since considerable advances have been made in the past 8 years, the present book is out of date and rather unbalanced; thus numerical methods for the solution of the boundary-layer equations occupy just over one page of text, whereas approximate methods occupy over 30 pages.

This lack of discussion of recent work means that the treatment of many topics is less complete than is now possible and that in some cases the treatment is misleading since it has been completely overtaken by later work. For example, the discussion on three-dimensional separation would have been of much more value if the author had included the careful numerical calculations of K. C. Wang and others (much of which is listed in the supplementary references). The discussion of shock-wave/boundary-layer interactions on aerofoils at transonic speeds is based mainly on early work at the National Physical Laboratory; and the unpleasant effects of these interactions are presented in some detail. However, apart from "The reader is referred to Pearcey (1961) for an extensive and detailed presentation", the book completely ignores one of the triumphs of modern separation control, namely the design of separation-free aerofoils for transonic speeds, and the later development of shock-free aerofoils.

The book does contain a vast number of useful references (although I am unable to understand how the author can ignore the work of the late Dietrich Küchemann on the control and use of separation for the design of wings for all speeds). I also found the chapter on experimental methods for the detection of separation interesting and useful. However, I do not consider that these features make up for the outdated nature of the rest of the book.

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