

Book Reviews

“The Aeroplane” Directory, 1955

We were once more delighted to receive a complimentary copy of that excellent and, to such as we, essential publication, “The Aeroplane” Directory of British Aviation for 1955

This book of reference is now so well known for its high standard of indexing and quality of production that further comment is superfluous other than to draw our members’ attention to the fact that this new edition is now available

There are the usual sections devoted to the Services, Civil Ministries, Establishments, etc., the Aviation Industry, Commercial Aviation (*i e*, the operators, civil aerodromes, insurance, commercial licence holders), International Bodies, Learned Bodies, Clubs, etc., Press, Training, Who’s Who. The Publishers claim that this work is “unique” and certainly it is a pattern for its kind

J W R

“Principles of Helicopter Engineering”

by JACOB SHAPIRO (Temple Press Ltd, London, 1955)

Helicopter technology having advanced rather more rapidly during the past decade than most engineers engaged in this ever widening field could readily assimilate, an up-to-date appreciation of the subject was long overdue. The task of writing a book covering so many aspects, both theoretical and practical, with new knowledge emanating continuously from the industry and from research establishments, must have been one of unusual difficulty. Mr Shapiro has accomplished the work magnificently and his 433-page volume published by Temple Press Limited in association with “The Aeroplane” is an outstanding achievement.

Extraordinarily well-written, attractively illustrated, authoritative and with very few errata for a first edition the contents will be absorbed by readers of widely different interests, be they aircraft designers, technicians, manufacturers or operators, or even readers unconnected with aeronautical activities who wish to learn the principles of helicopter engineering. They will, in fact, learn much more than the principles, the title being somewhat a modest one as there has never before been a book on helicopters which has described the components of the aircraft in so much detail. However, the title is justified by the philosophical treatment which characterises the whole volume.

It is good to see a definition of “helicopter” included in the glossary of terms as this has been a subject of controversy among helicopter exponents. The short list of symbols helps to focus attention on the main parameters. There is no place for historical introduction and it is surprising to see the name of Juan de la Cierva mentioned only once, credit being given to the great pioneer for having discovered an approximate method of determining the bending moment in a rotor blade.

The first two chapters discuss fundamental aerodynamic principles. The picture presented is very clear until the state of autorotation is described as turbulent. Does the author really intend to give the impression that autorotation is other than the smoothest working condition of a rotor? One of the diagrams mentions “ideal autorotation”. This adjective is at least more acceptable to some of us who still have a nostalgia for autorotative flight.

Chapter 3 is devoted to the principles of rotor blade dynamics including a discussion of rotor vibration. An inclination of the drag hinge towards the torsion hinge is referred to in the text as an “alpha two angle”. This should read “alpha one angle”. An alpha two inclination occurs when the drag hinge is tilted in a plane normal to the radial axis of the blade. Why the use of “alpha two” can allow drag hinge dampers to be eliminated would have been an interesting topic for discussion.

The fourth chapter gives an account of the control and stability characteristics of helicopters and an excellent dissertation relating to the use of derivatives. This portion of the book should prove useful to students who tend to treat the subject of stability as a mathematical exercise and lose the physical significance of the derivatives in the equations.

The last two chapters describe helicopter design requirements, configurations and details of components. The reader will follow easily the author's explanations by studying the profuse illustrations. About one hundred references are listed at the end of the book in a bibliography which should satisfy those readers whose appetite has been whetted by a rare mixture of penmanship and philosophy.

J A J B

"Rotorcraft"

by CAPTAIN R N LIPROT and J D WOODS (Butterworths Scientific Publications, London, W C 2, 1955)

Most people engaged in helicopter activities will have seen Captain Liprot's fascinating films of early helicopters. The book under review opens with photographs of a score of these types and, in parallel, a brief chronological summary of outstanding helicopter events to the present day. It closes with photographs, drawings and specifications of most designs of importance since the war. Between these items an attempt is made to cover the whole field of helicopter theory, design and flying qualities in 77 pages. It is not surprising, therefore, that the treatment is rather cursory.

Considered as a reference book the classifications, definitions and nomenclature are useful. Symbol conventions in helicopter work are notorious for their lack of uniformity, and perhaps it is insular to regret the use of American conventions when the output of British literature is not inconsiderable. With space so limited the inclusion of general conversion tables from English to metric units is puzzling.

The chapter on the description and operation of a 'typical' helicopter is not sufficiently illustrated to be of great use to the uninitiated. The information on performance estimation is useful but again it is probably not sufficiently informative for the learner and not detailed enough for the practising project estimator. Similar remarks apply to the very brief chapter on design study procedure.

The chapter dealing with the geometry of the articulated rotor is a useful contribution to clearing up a confused subject. The discussion on some control systems is likewise valuable, but the brevity of the section on stability prevents it being as useful as it might be. One wonders whether the designers of tandem rotor helicopters would agree with the statement, "the tandem type of multi rotor helicopter presents a simpler (stability) problem being much more like a fixed wing type longitudinally."

While the choice of contents of this book is open to criticism much of what is contained is not conveniently accessible elsewhere. It is a useful reference book including, in addition to what has been outlined, references to technical papers and a manufacturers' directory. The general standard of printing and layout is excellent.

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