Book Reviews

Airplane Structures. vol. I. Alfred S. Niles and Joseph S. Newell. Wiley, New York, and Chapman & Hall, London, ed. 4, 1954. xv + 607 pp. Illus. $7.75.

In most fields of engineering education there are usually one or more textbooks that continue to live as the decades roll by and countless young men and women are trained and educated to enter the many phases of the engineering profession. *Airplane Structures,* representing the aeronautical structural field, is such a textbook. For more than 30 years it has continued to serve as a recognized and widely used textbook as well as a reliable reference for the practicing engineer.

The fourth edition of *Airplane Structures,* although maintaining practically the same chapter outline as the third edition, is far more than the usual revised edition, since nearly every chapter has been completely rewritten and in several cases greatly modified or expanded. The preface of this edition indicates that most of the revision was completed before Newell's death in 1952, and thus I sincerely feel that this excellent edition is a final fitting tribute to an individual who has done so much to assist countless persons to prepare for and to build careers in aeronautical engineering.

A study of the new edition indicates a number of important additions and changes. They are as follows.

1) A completely new chapter concerned with basic information on the properties of materials as needed or necessary for structural analysis and design of aeronautical structures. The normal curriculum in aeronautical engineering is usually too crowded to permit a separate course on materials, hence the instructor must cover this subject in his regular beginning structures course. This new chapter on materials should therefore prove a welcome and useful addition.

2) The conventional airplane structure involves a single or multiple thin-walled cellular tube with both longitudinal and transverse stiffening elements. The efficient strength and rigidity design of this type of structure requires a thorough understanding of basic simple bending theory, particularly the so-called "shear flow distribution." The fourth edition contains a greatly expanded presentation on this subject and should prove quite welcome to teachers, since the treatment of this subject in the third edition was somewhat limited.

3) This edition deserves considerable praise for its extensive lists of new home problems at the end of most chapters. These excellent problem lists have been made more useful to the instructor and the student by arrangement into four groups, with each group presenting problems to emphasize a different goal in the training of the student.

4) The conventional airplane involves a multitude of various types of connections and fittings, the analysis and design of which are just as important as the primary structure. This book presents much new material on connections, particularly on riveted joint analysis.

Included as the last chapter is an introduction to statically indeterminate structures, a subject that was presented in volume II of the third edition. Since much other material formerly presented in volume II of the third edition has been transferred to volume I of the fourth edition, such as the treatment of the semitension field beam, I wonder why a chapter on the analysis of closed rings or frames was not included in this edition, for such structural units are a very important part of modern aircraft structures.

Both teachers and practicing engineers should welcome and make considerable use of the comprehensive reference lists at the end of each chapter.

As during the past 30 years, *Airplane Structures* will continue to play a very important part in the education of aeronautical engineers.

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Symbolic Wounds. Puberty rites and the envious male. Bruno Bettelheim. Free Press, Glencoe, Ill., 1954. 286 pp. $4.75.

Bruno Bettelheim's stimulating and controversial book has two aims. On the positive side, it seeks to propose a new theory of puberty rites on the basis of clinical and anthropologic data indicating that men's envy of the female organs and of their functions is at least as strong as, if not stronger than, women's envy of the male organ.

In support of this thesis, Bettelheim cites a variety of cogent facts, such as the ritual surgery of the Australian aborigines which seeks to make the subincised penis like a vulva and which enables the male to equate the bleeding of his mutilated penis with the menses. He also cites data showing that men go through various rites suggesting that they too are capable of bearing children and of duplicating other important female sexual functions. These attempts often constitute the essence of "male secrets" whose spuriousness must not be revealed to the women. Due emphasis is also placed on Nunberg's finding that circumcised men, be they Occidental neurotics or normal primitives, often fantasy that circumcision was initiated by women and has as its aim the enhancing of women's sexual pleasure. The author's numerous clinical and anthropologic data appear to substantiate the validity of his qualitative, although not necessarily his quantitative, thesis; that is, whereas male envy of female procreative functions may be held to have been proved, I am not convinced that this envy has been shown to be *stronger* than female penis envy.

The book's second, negative or critical purpose is to challenge Freud's theory that circumcision represents attenuated castration and has as one of its chief pur-

poses the sexual and other intimidation of the young male by the old male, and the enforcement of the incest taboo. Actually, because of the basic fact that all psychic activities are heavily overdetermined, a proof of the validity of Bettelheim's thesis does not *automatically* represent a refutation of Freud's thesis and must, instead, be viewed as a valuable supplementation thereof. Bettelheim's attempted "refutation" of Freud's view also suffers from factual inaccuracies. He asserts that circumcision is nowhere equated with castration. Yet, in Merker's book on the Masai, which Bettelheim cites, we read that an initiate's father was ridiculed by the circumcisers, because during circumcision the son allegedly "bellowed like a bull which is being castrated." The statement that male Australian aborigines are kind fathers is correct but does not abolish the fact that among those people, in times of famine, foetuses are aborted to feed those already born, small children are fed to older ones, the young are terrorized by the magic "bone pointing" of old men, and the penalty for a trespass on the dietary and other privileges of the old is the indefinite postponement of the signs of sexual maturity—surely an equivalent of castration-threats.

On the whole, Bettleheim rendered an important service to anthropology and psychoanalysis alike by his thoughtful and creative discussion of a relatively neglected and highly important aspect of the relationship between the sexes and of puberty rites, which supplements but in no way refutes other psychoanalytic and anthropologic theories regarding these complex matters.

The publishers are to be congratulated for having published a fine book in a format worthy of its contents.

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Fluid Dynamics. vol. IV. Proceedings of 4th symposium in applied mathematics of the American Mathematical Society held 22–23 June 1951. M. H. Martin, Ed. McGraw-Hill, New York, 1953. v + 186 pp. Illus. $7.

This book, the fourth volume in the valuable series of reports on applied mathematics symposiums arranged by the American Mathematical Society, contains 12 papers written by specialists for specialists. Some of the authors are leading authorities in their fields, and all papers are written on a very high level of competence. There are three points of view discernible in the literature of fluid dynamics: that of the physicist, that of the aeronautical engineer, and that of a professional mathematician. All three are ably represented in this collection.

Some of the papers are comprehensive reviews of the subject. Others are technical discussions of a single problem that could just as well have been published in a scientific journal. As far as subject matter goes, some papers deal with recently developed disciplines of fluid dynamics, which abounds in open problems and even in controversies, such as the theory of turbulence and the theory of potential transonic flows. Other papers discuss such classical matters as conformal mapping and the solution of the Poisson equation, the emphasis in this case being on effective numerical solutions. The fact that new and interesting results are possible in such fields confirms the dictum of Poincaré that no mathematical problem is ever completely solved.

There are two papers on turbulence (Chandrasekhar, Lin), six papers on flows of compressible fluids (Busemann, Meyer, Thomas, Carrier and Yen, Martin and Thickstun, Burgers), five papers on incompressible flows (Heins, Theodorsen, Birkhoff, and Young and Zarantonello, Synge, Weinstein), and one paper on hydrodynamics and thermodynamics (DeGroot). The book is very attractively printed. There are voluminous bibliographies and a good index.

Although no book of 186 pages can possibly give a comprehensive picture of the present state of fluid dynamics, this volume gives an excellent cross section of this actively developing science, and it will be of great value to every worker in this field.

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Intertidal Invertebrates of the Central California Coast. S. F. Light's *Laboratory and Field Text in Invertebrate Zoology,* rev. by Ralph I. Smith *et al.* Univ. of California Press, Berkeley, 1954. xiv + 446 pp. Illus. $5.

The book under review is a new revision of the late S. F. Light's well-known laboratory and field textbook for his course at the University of California. The significance of the book is greater than its primary purpose as a guide to the identification of the fauna of a limited region for the use of a particular university course, and it is this significance that invites wide notice. What we have is a series of illustrated determinative keys to the species of the more common intertidal animals. Each key is preceded by a compact discussion of the group, emphasizing the morphology that must be mastered before attempting identifications, and each is followed by a list of species, sometimes annotated, which will find wide use faunistically.

The revision has been made mostly by specialists with a firsthand knowledge of the groups, and the work therefore makes a distinct contribution to the knowledge of the California marine fauna. There are additional sections on problems of classification and identification and a rather extended chapter on field studies that is arranged on a habitat basis. Specific suggestions are made for special problems that can profitably be investigated during a summer course. There is a highly selected, useful bibliography. The book is not meant as a self-sufficient textbook of general invertebrate zoology; the discussions of morphology, classification, and ecology are not that complete.