

# Aeronautical Bookshelf

**The Tale of the Comet**, by Derek D. Dempster. Allan Wingate (Publishers) Ltd., 12 Beauchamp Place, London, S.W.3. Price 21s. Illustrated.

THE story of the Comet will probably be told as long as men fly, and as long as they enjoy a good tale. There can be few true stories so full of such emotional ingredients—the dream, the vision, the challenge to conquer new technological peaks. The Comet was born of all these things. It became a national triumph, the symbol of a great progressive nation. And then the triumph was cruelly transformed into tragedy—a tragedy that tested the character of the nation, and proved that it was not lacking. The story alone of what happened after those disasters seven miles high over the Mediterranean, the subsequent salvage operations and the work of technical detection, must rank as one of the most outstanding of our time.

The story of the Comet has never been told as it deserves to be told: indeed, there has really been only one book on the subject, *The Comet Riddle*, by Timothy Hewatt and W. A. Waterton, and that was disappointingly superficial. In *The Tale of the Comet* Mr. Dempster aims at filling the gap in the chronicles of technical progress; but he has only narrowed it. Those who look for new and deeper insight will be disappointed, for the book is mainly a rewrite of material already published. But it is still quite fascinating to relive those five-year-old emotions, and it is satisfying to find that the author has taken care to maintain a high standard (with only minor lapses) of accuracy.

It is a pity that this merit is obscured by the literary style, which especially in the earlier passages is unnecessarily over-dramatized and strident. For example:—

"Captain Johnson [commander of the B.O.A.C. Argonaut which took off from Rome just before Comet 1 G-ALYP] handed over to his First Officer and went back to the passenger cabin. He looked pale and worried as he took the empty seat next to Noel Monks—the seat Chester Wilmot would have had.

"He paused for a few seconds and then in a blurted whisper said: 'I'm afraid your pal Wilmot has had it. The Comet has gone in. It is not answering our calls. Don't tell anyone!'

"Monks, a burly, pink-faced and quietly gregarious individual, paled, and for the next three hours sat glumly nursing his terrible secret."

The Comet story does not deserve this sort of treatment.

J. M. R.

**Sputniks and After**, by Karl Gilzin. MacDonald & Co. (Publishers) Ltd., 16 Maddox Street, London, W.1. Price 21s. Illustrated.

To an account of Russian space-travel work to date are added some shrewdly imagined glimpses into the future. The translation from the Russian retains some of those superlatives which we have come to expect—and to ignore—in propaganda.

But the body of the book is good, with some revealing illustrations and accounts of Russian achievements, plus a simply written introduction to the space around us. The author does not pretend that safe space-travel is yet possible, and he paints a lively picture of the problems still to be overcome. Of the meteorite hazard he says that some of these objects are mere specks of dust while others are "tremendous fragments of celestial bodies, entire mountains rushing about in space and usually surrounded by a suite of smaller bodies." Yes, there are certainly some problems to be faced.

A. C. B.

**High Temperature Effects in Aircraft Structures**, edited by Professor N. J. Hoff. Pergamon Press Ltd., 4 Fitzroy Square, London, W.1. Price 70s. Illustrated.

ONE original object of this publication was to acquaint European scientists and engineers with aspects of high-temperature effects on structures by reviewing them in turn. In fact, of the sixteen chapters, nine are of American origin, with most authors writing reasonably within their previous experience. This change has no doubt enhanced the value of the work, providing the reader has the mathematical background required.

Professor Hoff, as editor, mentions the White Paper of 1957. Its effects are apparent in the relatively small British contribution to the subsequent review of Western high-speed aircraft and missiles.

While any high-speed vehicle is only as good as its materials, and the importance of understanding basic phenomena cannot be denied, the specialized chemistry in the non-metallic material sections is unexpected in a general review. Turning to activation energy, the greater applicability of this concept to polymers will be envied by the structural engineer, who cannot usually apply it in a working temperature range.

The treatment of creep includes mechanical analogues, column buckling and redundant structures. Although the examples are

simple in comparison with aircraft, they enable principles to be illustrated. The section on high-temperature fatigue is noteworthy for its interesting diagrams and discussion of material damping.

Physics are in evidence in the discussion of external sources of heat up to free-molecule conditions, while heat transmission through the structure is treated in an engineering manner. The section on numerical methods, with Schmidt's plot in evidence, is welcome.

Thermal stresses and buckling are covered by extensions of standard methods. Professor Van der Neut provides the only discussion of structural details, with his suggestions for relieving thermal stresses. Detail integrity is as important as overall calculation, and more "nuts and bolts" would have helped this balance. The coupling of aeroelasticity and heating is discussed from first principles. The frightening examples on solid double wedges are now well known, but the effects do not apply with such severity to hollow sections. Finally, as theory needs checking, there are chapters on testing and similarity laws, with a description of an analogue network for determining temperature distribution.

Overall, there is little repetition and the notation is almost consistent. At the price, the work is worthy of inclusion in any technical library, although 70s may be a little high for the individual student.

B. O. H.

**Rocket Propellants**, by Francis A. Warren. Reinhold Publishing Corporation, U.S.A. (English distributors, Book Centre Ltd., North Circular Road, London, N.W.10). Price 52s. Illustrated.

THE author is manager of the Special Projects Section of the Southwest Research Institute's Department of Chemistry, and has been working with propellants and rockets since 1942. It is therefore a little disappointing to find that his book is too general to be of great service to the rocket engineer. The first three chapters are a straightforward account of solid-propellant systems, ingredients and manufacturing processes, and it is informative and helpful as far as it goes. Mr. Warren is clearly knowledgeable in this field, and his chapters on safety, evaluation, quality control and igniters give much useful information. Sometimes he is tantalizingly indefinite; for instance, he says "a special non-propulsive device has been developed for some rockets so that they will not move if accidentally ignited," but fails to give any description of it.

The discussions of liquid-propellant systems are too elementary to be of value. This reviewer would have preferred the book to be confined to solid propellants, with much more detail about the design of the hardware associated with them.

Mr. Warren's work is often marred by misleading, and sometimes downright incorrect, statements—such as "high-temperature gases pushing against the surrounding air or pistons." The uninitiated can too easily be led astray by this kind of verbal carelessness. The melting point of hydrogen peroxide is not 29 deg F as quoted, and the implication that this oxidant is started by reacting with hydrazine when it is employed as a mono-propellant is unfortunate, even if unintentional.

The best chapter in the book, in which Dr. Wiegand collaborated, is that on general performance characteristics. In it the basic equations relating the fundamental quantities are set forth with great clarity and simplicity, and the basic parameters describing the performance of a rocket motor are admirably expounded.

There is a short final chapter on the future of propellants, and free-radical, nuclear, ion and photon propulsion are briefly explained. Also in this chapter is a handy comparison of the temperatures, molecular weights and specific-heat ratios of a number of propellants. The bibliography is copious and much enhances the value of the work.

H. M. B.

**A Picture History of Flight** (revised edition), by John W. R. Taylor, Hulton Press Ltd., 161-166 Fleet Street, London, E.C.4. Price 35s.

ORIGINALLY published in 1955, this book now covers over twenty centuries of attempted and successful flight with no fewer than 652 well reproduced and accurately captioned illustrations.

A very great deal has been retained of the original work, but changes and additions have been made where necessary, and reflect not only advances made in the past few years but also changing opinions on the more controversial aspects of aviation history. Thus, among other alterations, the notes on Cody, Preston Watson, and Stringfellow have been revised: the last-named, for example, has been stripped of his title of the first man to achieve powered heavier-than-air flight, while grave doubts are thrown on some of the claims previously made for Preston Watson.

Changes at the end of the book consist mainly of addition of new aircraft types—notably the first two Russian Sputniks and the North American X-15, and the illustration of production aircraft where previously only photographs of prototypes were available.

If any criticism must be made—and this is not a book which invites fault-finding—it would be that no space has been found for so much as a mention of the new class of light strike and fighter aircraft being produced for the NATO countries. Apart from this, however, it is practically impossible to find a single event of any consequence that has escaped John Taylor's notice, or of which he has not been able to unearth an illustration.

M. R. H.