

ENGINEERING

Electricity Meters and Meter Testing

By G. W. Stubbings. (Monographs on Electrical Engineering, Vol. 6.) Pp. x+216. (London: Chapman & Hall, Ltd., 1939.) 12s. 6d. net.

IT is only of recent years that the question of the metering of electric supply has been seriously tackled. The question itself is a most difficult one, and the introduction of tariffs and the theory of statistics, and attempting an impossible accuracy, have certainly not made it easier. The easiest way is to put a sub-standard wattmeter in series with the consumer's meter for a day or a fortnight and then read them both simultaneously. If they both read the same then everyone is satisfied. But the meter reader who has had his own sub-standard meter tested at a standardizing institution and knows the curve of error of his own meter sometimes wonders whether it is correct or not. The present limits for consumers' meters as described in the Electricity Supply (Meters) Act of 1936 are $2\frac{1}{2}$ per cent plus or $3\frac{1}{2}$ per cent minus. That is, the permissible error when the meter is going fast is less than when it is going slow. The test of the meter at no load should always be taken, and if it is rotating then it is a long and costly business to find out what is wrong.

From what we have said it will be seen that it is no easy matter to meter an electric supply. Even the expert who is thoroughly familiar with the apparatus used in an electrical laboratory, or even in a meter-testing house, will find that there are numerous problems inseparable from the everyday work of the meter-tester that are not yet satisfactorily solved. For example, there are errors due to bearing friction, fluid friction, frequency, phase, self-braking, temperature, varying load, voltage variation, wave distortion, official limits, tariffs, etc. It is no easy task to keep in good working order hundreds of thousands of little meters, and the task of the superintendent of a meter-testing department is no sinecure.

The author of this book has a thorough knowledge of the difficulties in the way in Great Britain and knows well the difficulties in many cases of treating equitably suppliers and consumers. He includes an appendix giving the titles of many recent books on the subject and also of technical papers. The reader will find that it is no easy matter to become a meter expert.

Elements of Practical Aerodynamics

By Prof. Bradley Jones. Second edition. Pp. viii+436. (New York: John Wiley and Sons, Inc.; London: Chapman & Hall, Ltd., 1939.) 18s. 6d. net.

THIS is the second edition of an American book, the first of which was reviewed in NATURE of July 31, 1937. It is an exceedingly lucid and simply written students' text-book, that should prove useful to engineers or physicists commencing the study of aeronautics. A feature of the book is the large number of worked examples in the text, and further exercises at the end of each chapter. These are

carefully graded and form an admirable addition to the book; one which might well be added to most English books on this subject of the same standard.

The subject-matter has been brought up to date, and most of the more modern developments mentioned in a general way. Some of this later work is superficial, but not unduly so remembering that it is an elementary and necessarily restricted work. Among these are discussions on tapered monoplane wings, methods of working out low drag contours, performance calculations including approximate rapid prediction methods, problems of control and stability from the practical but not the mathematical point of view, and details of the more modern aerofoils (those more popular in the United States). A chapter on "Auxiliary Lift Devices"—about three pages—is disappointing, and makes no attempt to explain the many variations of the allied problems of speed range and control that arise from the use of these. Worked examples, as in some of the other chapters, would have been particularly valuable here.

As in the first edition, the book ends with chapters on such subjects as materials, meteorology, instruments, etc. These are accurate so far as they go; but are so short as to be of little use. They are illogical in a book with this title, and it seems a pity that the author did not confine himself to aerodynamics, and give fuller discussions upon the aspects of this in the relevant chapters.

FORESTRY

Principles of Forest Entomology

By Prof. Samuel Alexander Graham. (McGraw-Hill Publications in the Zoological Sciences.) Second edition. Pp. xvi+410. (New York and London: McGraw-Hill Book Co., Inc., 1939.) 24s.

WE welcome the appearance, after a decade, of a second edition of this well-known handbook. Considerable advances have been made in that period as regards our knowledge of the principles of forest entomology. The European pine sawfly, for example, has become prominent as a forest pest in that short period. Certain chapters of the book have been almost wholly rewritten: others have been revised, and the bibliography has been brought up to date.

Elementary Forest Mensuration

By M. R. K. Jerram; with a Chapter on The Measurement of Forests, by R. Bourne. Pp. x+124. (London: Thomas Murby & Co., 1939.) 8s. 6d. net.

IN this little book, Mr. M. R. K. Jerram states that the word 'elementary' has been prefixed to the title as the work is intended chiefly for the professional forester rather than research specialist, and he has been guided in his method of treatment of the subject by this factor. For the greater number of professional foresters, either in being or still in the student stage, forest mensuration is a practical part of their work—the higher branches of the subject are required by the research worker alone.